J-5 has accepted fly ash since it was opened and is currently operating under West Virginia Landfill Permit IWL-6313-86. Drainage ditches around the site allow surface water to bypass the landfill sections. The area, excluding the active unit J-5, is currently covered with soil and vegetation.

Oil Storage Tank Area (SWMU No. 2-2): The oil stored in these tanks was previously used during cavity development activities in the No. 3 Brine Field, as described in Section 3.1.2.1. The potential for periodic spillage existed in the area surrounding the tank; however, no evidence of spills or leaks is documented. This facility was closed in 1991, and the tanks were removed.

Based on the preceding information, both of these units will be included for investigation in the RFI Work Plan.

4.2.4 Areas of Concern(AOCs)

There are no AOCs located in this area.

4.3 AREA 3: AMMONIA PROCESS AREA

Area 3 is located in the northwest region of the PPG Natrium Plant and encompasses the entire ammonia process facility. Included in Area 3 are a hydrogen storage tank, ammonia storage tanks, the ammonia process building, a cooling tower, spray coolers, ammonia oil water separator, a former acid storage tank, a vehicle maintenance area, and a vehicle cleaning area.

4.3.1 Process History

The ammonia process at the Natrium facility produces liquefied ammonia from hydrogen gas produced in the chlorine process and nitrogen gas purchased from an offsite supplier. The raw material gases are compressed, reacted in the presence of a catalyst, cooled, and condensed into a liquid for storage prior to shipment offsite. Figure 4-3 presents a flow diagram for the ammonia process.

The wastes produced by the ammonia process include waste gases from the reaction of the hydrogen and nitrogen, cooling water and stormwater runoff and waste oil from the compressors used in the process which becomes mixed with the condensate water. The waste gases, mostly inert nitrogen with a small amount of ammonia, are vented to the atmosphere. The non-contact cooling water and the stormwater runoff are discharged to the Ohio River via a permitted outfall. The condensate water mixed with compressor oil is treated in an oil/water separator, with the wastewater also discharged to the Ohio River via the permitted outfall and the oil generated by this process collected in drums for shipment to a permitted oil recycle or disposal facility.

4.3.2 Closure Activities

No closure activities have taken place in this area.

4.3.3 Potential SWMUs

This area contains three potential SWMUs including an Oil/Water Separator Area, a Vehicle Repair Facility, the Storm Sewers, and trenches and drains associated with the ammonia process area. The locations of these potential SWMUs are presented in Figure 4-2.

Oil Water Separator Area (SWMU No. 3-1): An oil stained area is visible on the ground surrounding the tank.

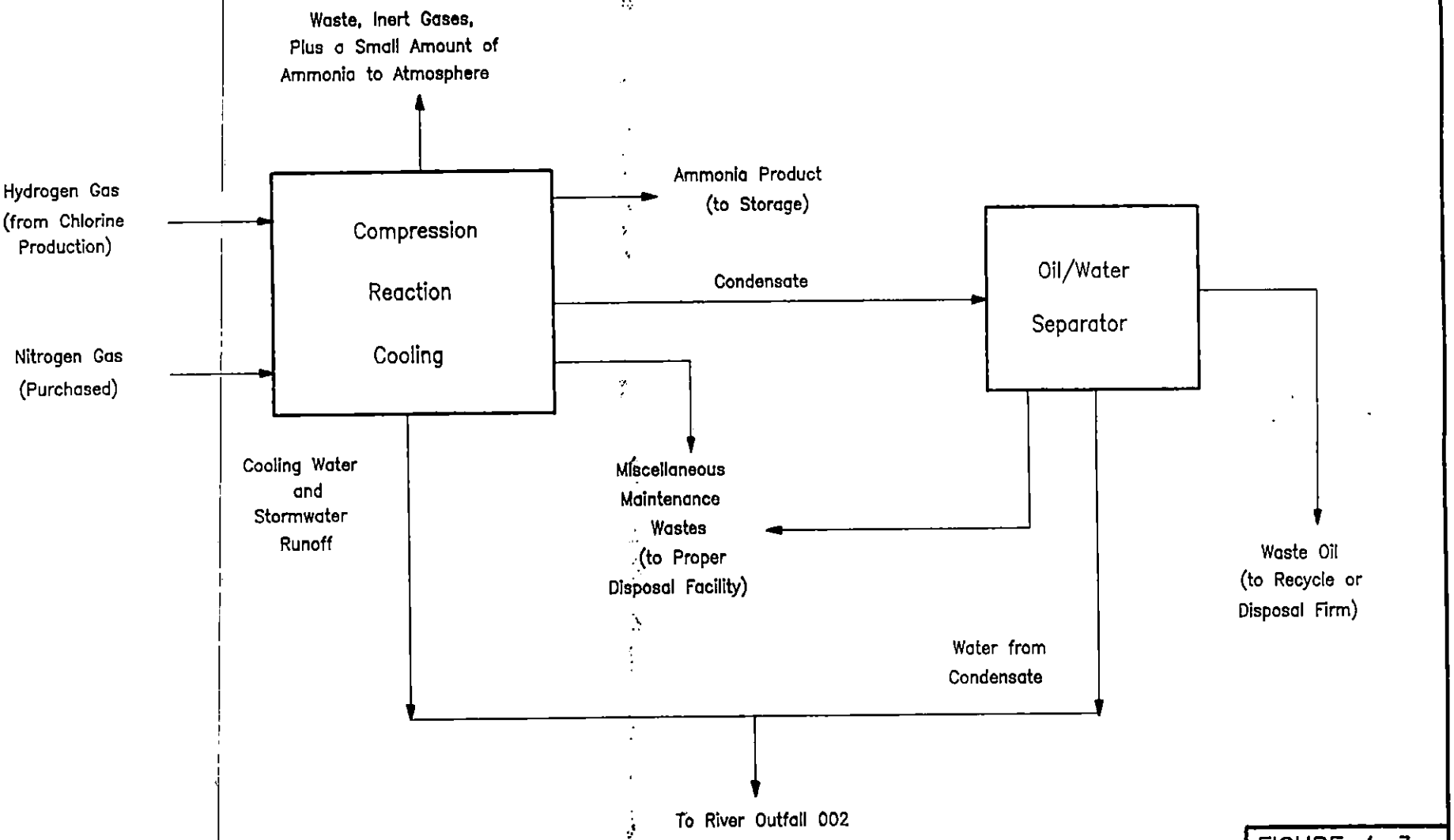


FIGURE 4–3

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 3 AMMONIA PLANT
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92 | DR.: B. SNYDER SCALE: N.T.S. | DWG. NO.: PPG–2

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

Vehicle Repair Facility (SWMU No. 3-2): The wastes generated in this area include soiled rags, old mechanical parts, small quantities of waste oil and cleaning solvents. This unit has small waste storage units in which the waste is contained until it is disposed in an offsite landfill.

Storm Sewers, Trenches and Drains (SWMU No. 3-3): No leaks or releases are apparent in this unit. However, spills or releases from the oil/water separator could drain into this system. This oil could then discharge to the underflow weir at Outfall 002. This sewer system mainly collects rain water runoff; however, although, some process wastewater and cooling water are also collected.

Based on the preceding information, all of these units will be included for investigation in the RFI Work Plan.

4.3.4 Areas of Concern (AOC)

The only AOC in Area 3 is an Acid Storage Tank (AOC No. 3-1A) which is no longer used. This tank stored hydrochloric acid but never stored any waste material. Although there are no documented spills or releases from this unit, its weathered condition suggests that release potential exists. The location of this AOC is presented in Figure 4-4.

4.4 AREA 4: MARSHALL PLANT WASTE AREA

Area 4 is located approximately one mile north of the center of the plant, between the Ohio River and the CSX Railroad right-of-way, and is within the 100-year floodplain of the Ohio River. The limits of Area 5 were chosen to include flyash landfill units J-1, J-2 and the Marshall Plant Waste Pond area. These units all accepted hazardous substances in the past and were grouped together for this reason. A Raney well is also located along the river in this area.

4.4.1 Process History

This area has not been used for process purposes.

4.4.2 Closure Activities

PPG has proposed an interim measure to cap the J-1 and J-2 cells of the flyash landfill. These cells were identified as being probable sources for elevated barium concentrations in surrounding groundwater. PPG analyses of groundwater indicate soluble barium levels are consistent with Ohio River water concentrations. PPG has already begun the design process and plans to install the cap by spring of 1993, in accordance with PPG's response to USEPA comments on the VI report.

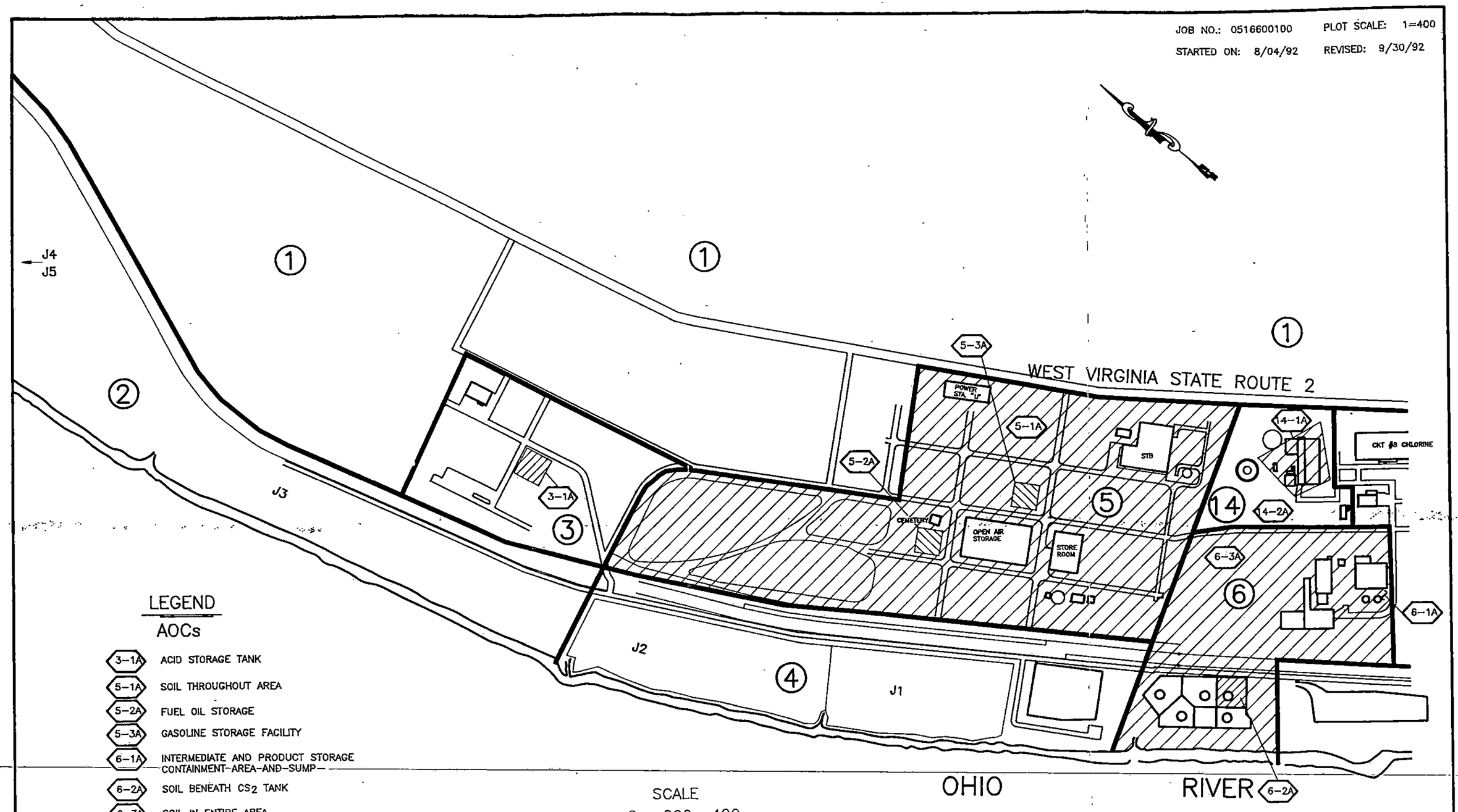
4.4.3 Potential SWMUs

Two SWMUs previously identified in the RFA are located in this area. These SWMUs are the Marshall Plant Waste Pond (RFA No. 5) and Bottom/Fly Ash Units J-1 and J-2 (RFA No. 10). The locations of these units are presented in Figure 4-2.

Bottom/Fly Ash Landfill Units J-1 and J-2 (SWMU No. 4-1): Units J-1 and J-2 accepted mostly bottom ash until their closure in 1975. Barium wastes which accumulated in the Inorganics Wastes Pond were also buried in these units from 1963-1972. When the Inorganics Waste Pond became full of solids, the material was dredged from the pond and hauled to J-1 and J-2 for disposal. This waste was estimated to be 48,700 tons and consisted of $BaCO_3$, $BaSO_4$, Fe_2O_3 and SiO_2. No other chemical waste is known to have been disposed of in J-1 or J-2. According to the RFA, visual

JOB NO.: 0516600100 PLOT SCALE: 1=400

STARTED ON: 8/04/92 REVISED: 9/30/92



LEGEND

AOCs

- 3–1A ACID STORAGE TANK
- 5–1A SOIL THROUGHOUT AREA
- 5–2A FUEL OIL STORAGE
- 5–3A GASOLINE STORAGE FACILITY
- 6–1A INTERMEDIATE AND PRODUCT STORAGE CONTAINMENT-AREA-AND-SUMP
- 6–2A SOIL BENEATH CS_2 TANK
- 6–3A SOIL IN ENTIRE AREA
- 14–1A SOIL IN PROCESS AREA
- 14–2A CS_2 TANK CAR LOADING AREA

DENOTES BOUNDARY LOCATIONS FOR GEOGRAPHIC AREAS.

SCALE
0 200 400
1"=400'

FIGURE 4–4

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AOCs LOCATED IN AREAS 2,3,4,5,6 AND 14	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/09/92	DR.: R.C. LIPP
	SCALE: 1"=400'	DWG. NO. 05166–B1A

evidence existed showing that scrap steel pipe was placed in J-1. Releases through leaching and groundwater migration may have occurred.

Marshall Plant Waste Pond (SWMU No. 4-2): The Marshall Plant Waste Pond was first used by PPG Industries in 1954, but it existed prior to PPG's purchase of the facility. This unit was built by the U.S. Government and possibly was used by other former operators. Its original intent was to serve as a waste disposal site for a sub-tropical bleach plant (STB). However, this plant never operated, and the pond was not used for its intended purpose.

The waste pond has a well vegetated soil cover. This unit was used as a disposal site for waste streams from a chloro-alkali plant, chlorinated benzene plant, and titanium tetrachloride plant. Specific wastes deposited in this pond include:

- Dopp Kettle Waste (1954-1974) including approximately 138,000 lbs./yr. of ferric chloride, chlorinated benzenes and tar;
- Titanium Tetrachloride Drier Waste (1956-1971) - approximately 1,400,000 lbs./yr. of Fe, Mn, Mg, Zn, Cd,Cu, V, and Cr compounds;
- Tracifier Waste from the chlorine production area (1966-1975) - approximately 200,000 lbs.yr;
- Halogenated aliphatics, including CCl_4, K085 wastes, various heavy organics, and inorganic salts.

The Marshall Plant Waste Pond was closed in 1979. It is unknown whether releases from this unit have occurred.

Based on the preceding information, both of these units will be included for investigation in the RFI Work Plan.

4.4.4 Areas of Concern (AOC)

There are no AOCs located in this area.

4.5 AREA 5: MARSHALL PLANT PRODUCT AREA

Within Area 5, the original Marshall Plant production facility existed. This area is centrally located within the Natrium facility and lies north of the MCB/CS_2 area. The Marshall Plant was originally built as a sub-tropical bleach (STB) plant by the U.S. Government. Currently, a RCRA hazardous waste drum storage area exists within the Marshall Plant area, inside the STB building. The area also includes an inactive Class III non-chemical sanitary landfill. A trash compactor facility, which replaced the sanitary landfill, operates in this area. This compactor acts as a non-hazardous waste collection unit for all dumpster waste collected throughout the Natrium facility.

4.5.1 Process History

The Marshall Plant was originally not part of the Natrium facility. The plant was constructed during World War II to produce various chlorinated organic chemical products. From the end of the war until 1952, it was used to produce various specialty organic chemicals using batch production processes. Currently, the Marshall Plant area is used as a permitted drum storage area for RCRA hazardous wastes, as a purchased materials warehouse storage site, and as a location where several

storage tanks are used for products from the MCB processes. Figure 4-5 presents the various uses of the Marshall Plant. Figure 4-6 shows the inputs to and outputs from the former Marshall Plant Waste Pond.

4.5.2 Closure Activities

The Sanitary Landfill was closed by PPG under applicable State of West Virginia regulations in 1990. As part of this closure, a landfill cap was placed to minimize future migration potential.

The Marshall Plant RCRA Hazardous Waste Drum Storage Area was constructed to prevent releases of chemicals to the environment. A closure plan has already been prepared for this unit and will be implemented when the unit ceases operation.

4.5.3 Potential SWMUs

Two SMWUs and five potential SWMUs are located in this area. The Marshall Plant RCRA Hazardous Waste Drum Storage Area (RFA No. 3) and the Sanitary Landfill (RFA No. 11) were previously identified in the RFA. The potential SWMUs located in Area 5 are the Dumpster Trash Compactor Unit, Used Oil Drum Storage Unit, Used Drum Storage Area, Used Oil Storage Tanks, and the Process and Sanitary Sewer. The locations of these units are presented on Figure 4-2.

RCRA Hazardous Waste Drum Storage Area (SWMU No. 5-1): The Marshall Plant Hazardous Waste Container Storage Area is a RCRA-regulated facility and was addressed under the Part B permitting process. This storage unit began operation in December 1979 and is currently used to store the following wastes:

- Distillation column bottoms from the production of chlorobenzenes (K085 wastes)
- Mercury-contaminated wastes from the mercury cell production of chlorine (DOO9)
- 1,1,1- trichloroethane waste solvent from degreasing operations
- Waste non-halogenated paint solvents
- Waste laboratory chemicals from analytical testing
- Alkaline waste

The wastes are stored within bays in drums which are shipped off-site periodically for disposal. A completely enclosed structure with concrete floor and six inch curbs separates the bays. No known releases occurred from this unit.

Used Oil Storage Tank (SWMU No. 5-2): This 2,000 gallon tank stored used lubricating oil. This unit existed as an above ground tank with containment diking. The tank was recently removed.

Used Oil Drum Storage Unit (SWMU No. 5-3): This unit also stores used lubricating oil. The area is concrete curbed. This unit has a low potential for an uncontained release.

Used Drum Storage Area (SWMU No. 5-4): Drums which were previously used are stored in this unit. These drums may contain residue from their prior use.

Process and Sanitary Sewers (SWMU No. 5-5): During routine operations, wastewater containing detectable levels of RCRA hazardous wastes and hazardous constituents may have been present in this system.

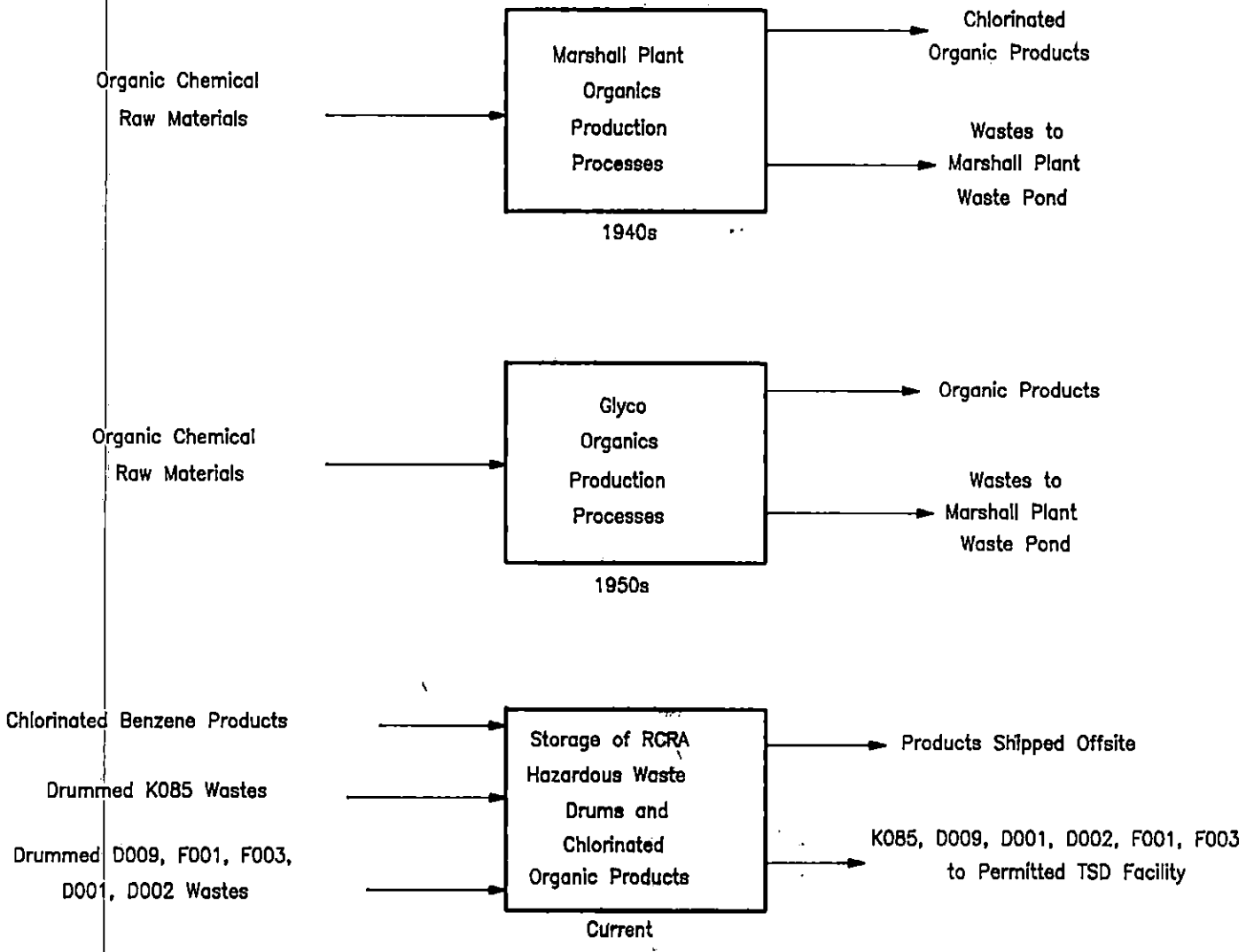


FIGURE 4-5

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 5 MARSHALL PLANT PROCESSES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG-3

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

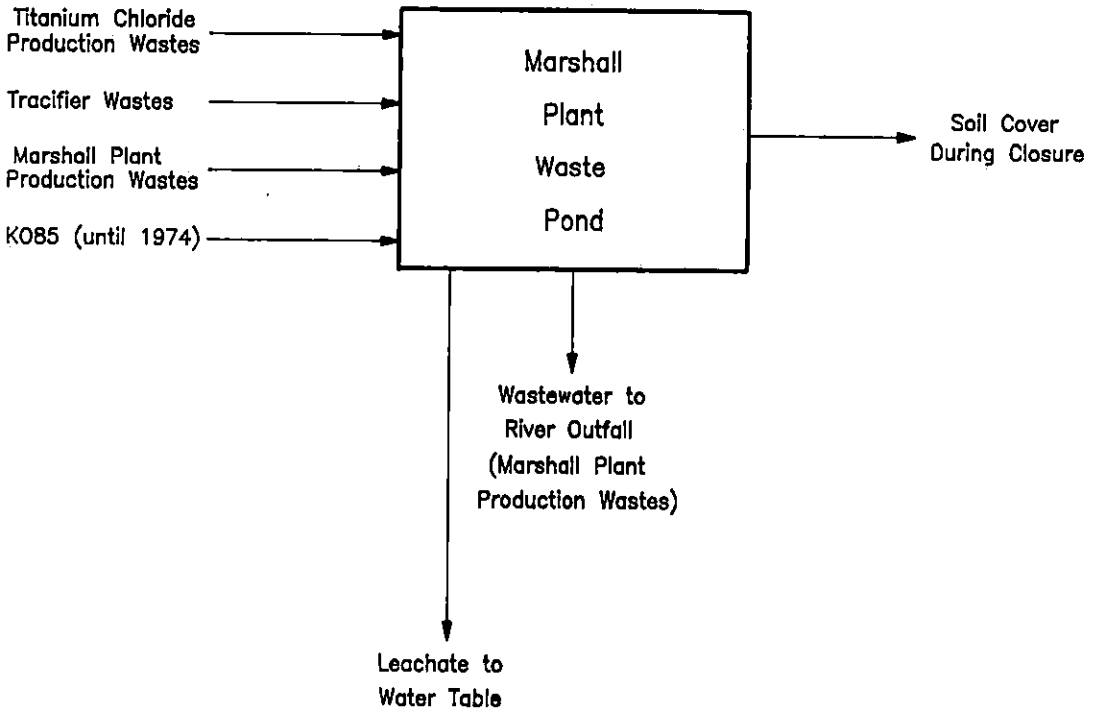


FIGURE 4–6

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 5 MARSHALL PLANT WASTE POND
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92 | DR.: B. SNYDER SCALE: N.T.S. | DWG. NO.: PPG–1

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

Sanitary Landfill (SWMU No. 5-6): The landfill began operation in January 1970 and was closed in 1990. This sanitary landfill has a capacity of about 35,000 tons. No chemical or food wastes were placed in the landfill. Wastes deposited in this trench-type landfill include paper, paper products, metal containers, lumber, cement blocks, bricks and small metal parts not marketable as scrap metal. Detectable levels of organic compounds exist in nearby monitoring wells. It is not known whether the release of these organics can be attributed to the landfill activities.

Dumpster Trash Compactor Facility (SWMU No. 5-7): This unit accepts general waste from dumpsters located throughout the facility. This compactor does not handle any hazardous wastes. No releases are known to have occurred from this unit.

Based on the preceding information, the sanitary landfill and the process and sanitary sewers are recommended to be included for investigation in the RFI Work Plan.

4.5.4 Areas of Concern (AOC)

The soil in this entire area (AOC No. 5-1A) may be subject to further investigation. During routine plant operations various potential contaminants may have been released to the soil. The locations of these AOCs are presented in Figure 4-4. An above ground fuel oil storage facility (AOC No. 5-2A) along with the area of a former gasoline storage facility (AOC No. 5-3A) are also present in this area.

4.6 AREA 6: MCB PRODUCTION AREA

The original MCB facility was built in 1947. The boundaries of this area were chosen to include the MCB production facility and extends toward the Ohio River to encompass the five storage tanks located along the river. These five storage tanks located along the river contain orthodichlorobenzene, monochlorobenzene, carbon bisulfide and benzene (2 tanks).

A satellite accumulation area for K085 waste produced during the MCB process is located near the process pad. This accumulation area acts as a drum holding station. When the drums are filled they are transported to the Marshall Plant RCRA drum storage area. A tank car loading area and a benzene barge unloading area are located within Area 6. Area 6 is located south of Area 5.

4.6.1 Process History

Various chlorinated benzene compounds are produced at the MCB process area at the Natrium facility. Using benzene purchased from an outside supplier and chlorine gas produced by the on-site chlorine processes, monochlorobenzene, ortho-, para-, meta-dichlorobenzene, trichlorobenzene and hydrogen chloride are produced using the Freidel-Kraft process. In this process, chlorine gas is reacted with liquid benzene in the presence of a catalyst to produce a mixture of the chlorinated benzene products, along with various by-products. The reaction products are treated in a series of distillation columns to separate the three main products and the waste reaction by-products. The liquid organic products are then cooled and either packaged in drums or stored in tanks until they are shipped offsite. The solid products are packaged in drums for shipment offsite after undergoing various particle sizing procedures. Figure 4-7 presents a flow diagram for the MCB processes.

The process offgas from the Fieidal-Kraft process contains a considerable amount of hydrogen chloride gas. This gas is absorbed in condensate water in an adiabatic absorption process in which the water absorbs the hydrogen chloride to produce a 32 percent solution of muriatic acid (HCl), which is also shipped as a product or used as a raw material elsewhere at the Natrium facility.

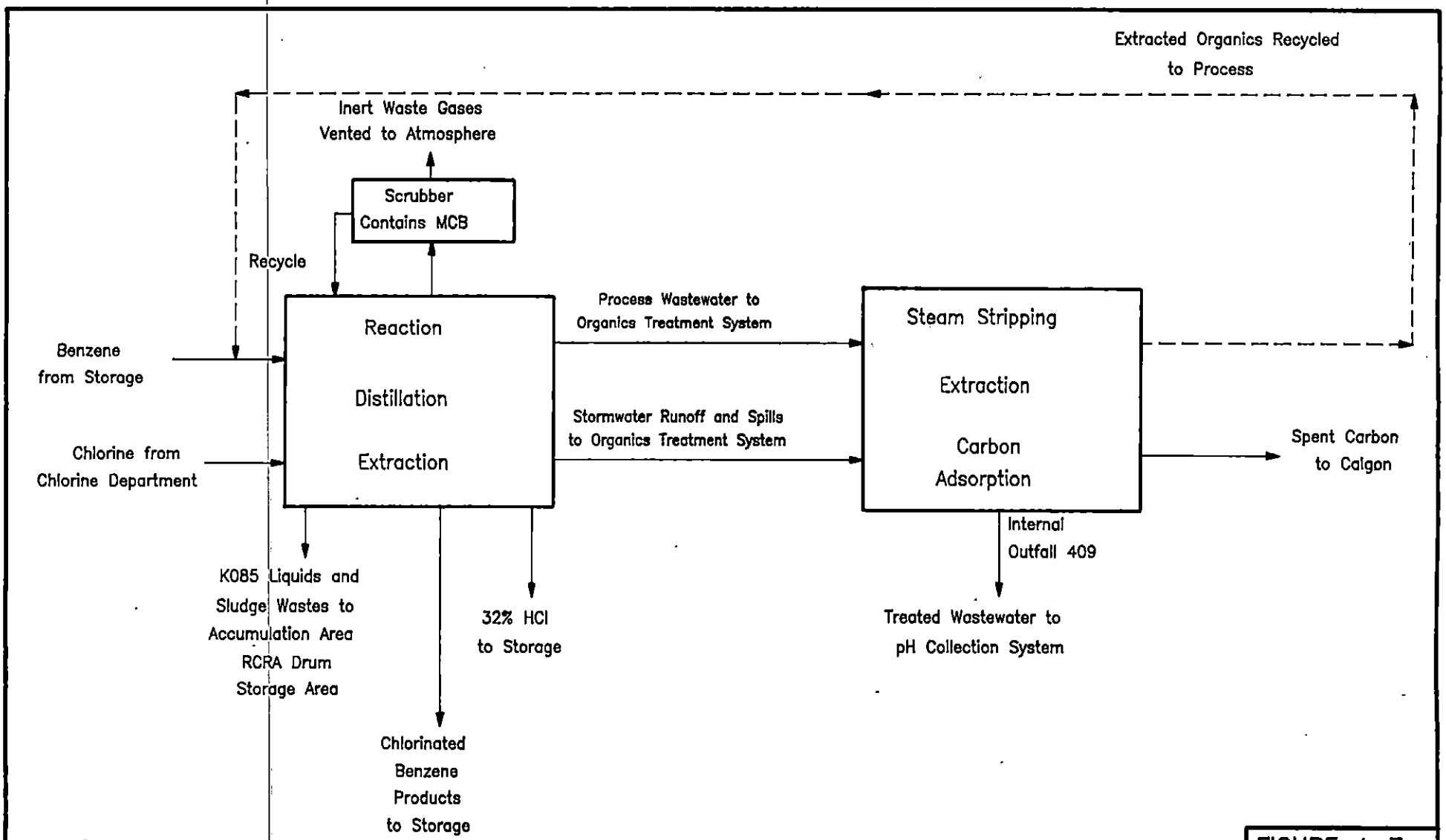


FIGURE 4-7

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 6 MCB PROCESSES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG-4

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

The wastes produced by the MCB processes include waste gases containing inert materials and organic vapors, organic reaction by-product wastes in both liquid and sludge forms, process wastewaters, cleanup wastewaters, stormwater runoff, and spills. The waste gases from the MCB processes are passed through a gas scrubber containing refrigerated MCB to remove any organic contaminants before they are vented to the atmosphere. The purge stream from the organic gas scrubber is returned to the benzene raw material stream used in the MCB production process.

The waste distillation bottom sludges from the MCB processes and the waste distillation bottom liquids from the trichlorobenzene distillation step are classified as RCRA hazardous waste code K085, and these wastes are collected in drums which, when full, are transferred to the permitted RCRA drum storage area (located at the old Marshall Plant) for later disposal at an offsite RCRA permitted facility.

The process wastewaters, cleaning wastewaters, stormwater runoff, and spills are treated in an organics treatment system consisting of a steam stripping column, a tail gas scrubber, and a carbon adsorption system. The treated wastewaters exiting this system are then sent to the pH collection system for further treatment prior to discharge. The recovered organics from the steam stripping and extraction units are returned to the MCB process at various points for recycle and reprocessing. The spent carbon from the carbon adsorption system is returned to the supplier for regeneration.

The benzene used as a raw material in the MCB process arrives in a liquid form by river barge and is stored in a series of storage tanks located beside the river. All of these tanks have containment areas, and the benzene (2) and MCB tanks are equipped with a fume scrubber containing ortho-dichlorobenzene to remove organic vapors from storage emissions to the atmosphere. The runoff from the containment areas is checked for contamination prior to discharge to the river, and the scrubber blowdown is returned to the MCB process.

Prior to the construction of the organics treatment system two years ago, the wastewaters and stormwater runoff from the MCB process were discharged directly to the Ohio River, and the cleaning wastewaters were discharged to the ground. There were organic contaminants detected in the soils excavated during construction of the organic treatment system which may have been present as a result of these practices.

4.6.2 Closure Activities

The MCB organics waste treatment system and MCB loading area have been upgraded in the past few years. The waste treatment system was replaced and repaired, including all waste sewers and sumps. The loading area was upgraded by installing sumps and collection systems to collect spills and leaks during loading and unloading.

In addition, PPG revised its production process in the MCB area to eliminate waste PCBs from the dichlorobenzene step. This resulted in less waste handling and eliminated the possibility of PCB releases.

4.6.3 Potential SWMUs

Seven potential SWMUs are located in the MCB Production Area. They include the K085 Accumulation Area, the Less Than 90 Day Accumulation Area, the Organics Treatment System, the MCB Process Sewers, the MCB Product Tank Car Loading Area, Cleanout Area Used to Clean Process Equipment, and a Former Location of a BHC Pile. The locations of these units are presented in Figure 4-2.

Any contamination existing in this area is due to past releases which occurred during routine production. About two years ago the facility was upgraded with clay lined containment areas, curbing, and a waste treatment system located within the MCB process area. Low levels of organics were reported during the Preconstruction Site Characterization of the MCB Production Area. This characterization was performed prior to upgrading the MCB facility areas. Prior to upgrading the containment in the MCB process facility, any releases discharged during process operations would have discharged to NPDES Outfall 009.

K085 Accumulation Area (SWMU No. 6-1): Currently, K085 waste is generated as a solid waste at a rate of about 10-11 drums/week. This waste is moved to the Marshall Plant RCRA drum storage facility. There are no known spillage and releases from drums.

Less Than 90 Day Accumulation Area (SWMU No. 6-2): This area is used to store drummed waste which the facility is not permitted to store in either of the RCRA drum storage facilities. No known releases have occurred in this area.

Organics Treatment System (SWMU No. 6-3): Organic wastes collected in sewers and sumps in this MCB process area drain to a process waste collection tank which is pumped to the organics waste treatment system. This system is entirely within the MCB process area.

MCB Process Sewers (SWMU No. 6-4): Non-contact cooling water goes to the storm sewer system and directly to NPDES Outfall 009. Leaks in the heat exchanger would present a potential for organics discharge to river. Two monitoring units are in place for detection of organics. It is not known whether any releases occurred from this unit.

MCB Product Tank Car Loading Area (SWMU No. 6-5): Currently, any systematic releases collected in the railcar loading area are contained and pumped to the process waste collection area. Past releases are a concern because containment was limited.

Cleanout Area for Process Equipment (SWMU No. 6-6): An underground line was in place from the process pad to the storage tank. This line transported waste material to the tank. The contents were sent to a chlorinator and processed three times per year. Removal of the tank occurred in 1962 or 1963. The storage tank located in this area was used for MCB process equipment cleanout waste accumulation. Drums containing K085 waste were dumped into the tank. It is not known whether releases occurred from this unit.

Former Location of BHC Pile (SWMU No. 6-7): This unit stored waste received from the BHC plant. The waste was stored directly on the ground. The release potential for this unit is unclear since the pile no longer exists.

Based on the preceding information, all of these units will be included for investigation in the RFI Work Plan.

4.6.4 Areas of Concern (AOC)

Three areas of concern are located in Area 6. They include the Intermediate and Product Storage Containment Area and Sump (AOC No. 6-1A), the Soil Beneath the CS_2 Tank located along the bank of the Ohio River, and the Soil in the Entire Area (AOC No. 6-3A). Spills or releases of contaminants are known to have occurred in these areas. The locations of these AOCs are presented on Figure 4-4.

4.7 AREA 7: RESEARCH AND DEVELOPMENT AREA NEAR LABORATORY

This area is located on the east side of Route 2 and includes the present laboratory facility and the site of the former Research and Development (R&D) Center. The R&D Center was located northeast of the laboratory. Boundaries for Area 7 were chosen due to the adjacent geographic location of the R&D Center and the laboratory.

4.7.1 Process History

The Natrium facility had a small R&D Department (located near the present on-site laboratory building) which produced organic and inorganic products using bench and pilot scale processes. These products included chlorinated titanium compounds, chlorinated organic compounds, and some organic ether compounds. Figure 4-8 presents the general operation of the R&D department. The R&D department was closed in 1971 and the buildings and process equipment associated with it were subsequently demolished or removed.

There is little information available about the management practices used for raw materials and wastes at the R&D Department. However, available information indicates that some process wastewaters were discharged into the plant stormwater sewer. At least some of the R&D products and solid waste by-products were reported to have been deposited in the Marshall Plant Waste Pond. This site is currently used as a training area for plant emergency crews.

4.7.2 Closure Activities

No closure activities have taken place in this area.

4.7.3 Potential SWMUs

The only potential SWMU located in Area 7 is the Laboratory Sewer System. The location of this unit is presented in Figure 4-9.

Laboratory Sewer System (SWMU No. 7-1): The laboratory discharged chemicals into the sewer system which in turn discharges to NPDES Outfall 009. Verbal reports were given of isolated past instances where chemicals were occasionally released onto the ground outside of the laboratory.

4.7.4 Areas of Concern (AOC)

The Research and Development area (AOC No. 7-1A), which consisted of a building with pilot plants, was located near the laboratory in this area. Although this development area did not store waste, there is a need to investigate this area further.

An odor of organics was detected during excavation of a buried pipeline connected to the old Mercury Surface Impoundment. Various products were produced during the pilot plant's operation. These include the following along with their waste management practices.

- A large pilot plant produced titanium tetrachloride from 1956 to 1957. The waste was probably disposed of at the Marshall Plant Waste Pond.
- Oxychlorination of hydrocarbons was used to make EDC, perchloroethene, and trichloroethene. To a lesser degree chlorinated C_2's and C_1's were produced.

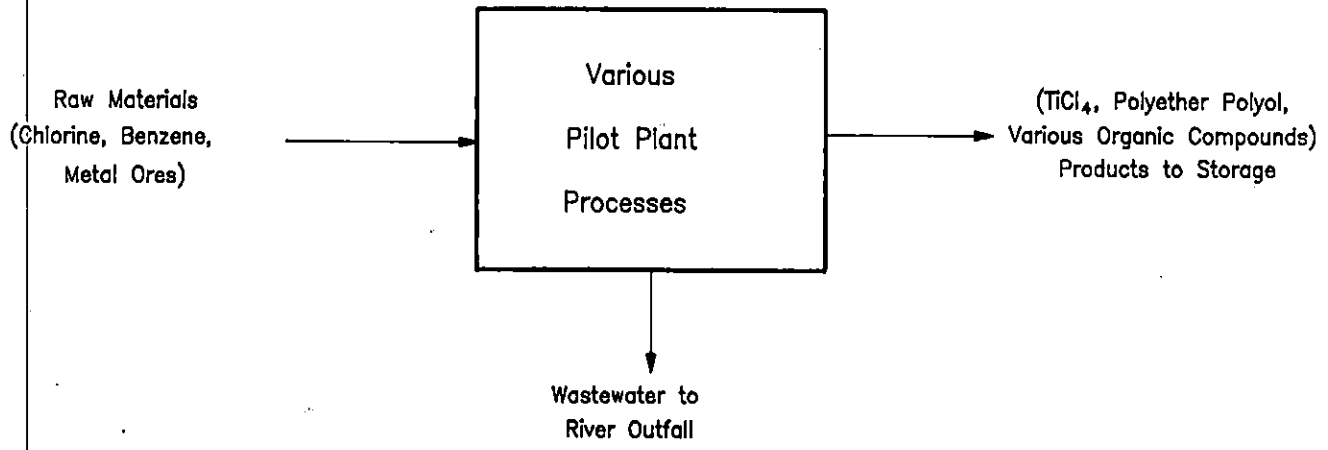


FIGURE 4–8

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 7 RESEARCH AND DEVELOPMENT PROCESSES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG–5

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

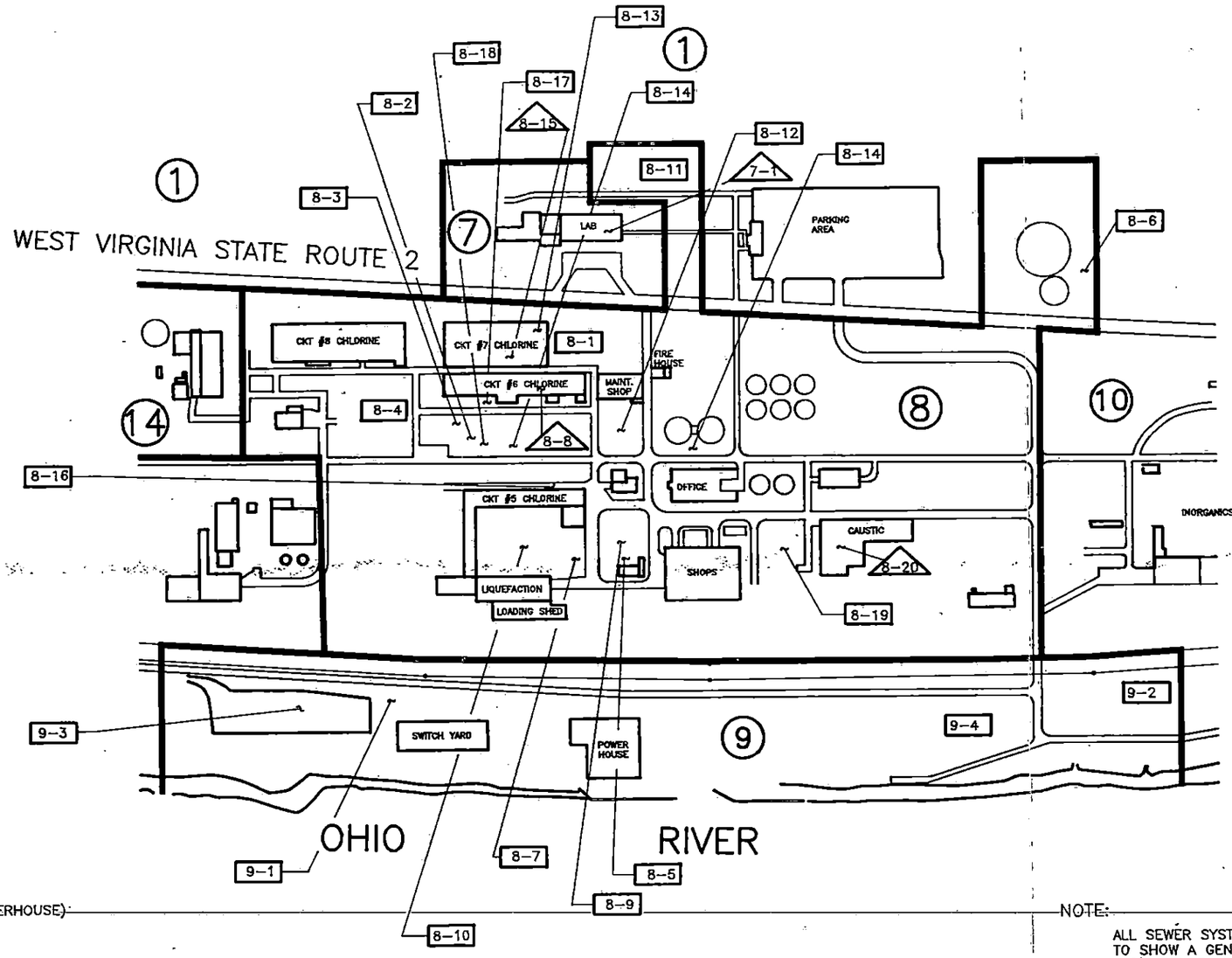
JOB NO.: 0516600100 PLOT SCALE: 1=400

STARTED ON: 8/04/92 REVISED: 9/30/92

LEGEND

- 7-1 LABORATORY SEWER SYSTEM
- 8-1 D009 SATELLITE ACCUMULATION AREA
- 8-2 AREA OF K073 WASTE TANK CAR
- 8-3 TRACIFIER TREATMENT SYSTEM (REMOVED)
- 8-4 CHLORINE COOLING/DRYING SYSTEM
- 8-5 LEAD/ASBESTOS TREATMENT SYSTEM(S).
- 8-6 OIL STORAGE TANK AREA
- 8-7 pH COLLECTION SYSTEM
- 8-8 NON-MERCURY PROCESS SEWER,TRENCHES, AND SUMPS (TREATED PRIOR TO DISCHARGE)
- 8-9 BRINE TREATMENT SYSTEM
- 8-10 FORMER SITE OF CIRCUITS 1-4
- 8-11 CLOSED MERCURY SURFACE IMPOUNDMENT (K106 WASTE)
- 8-12 MERCURY BRINE TREATMENT SYSTEM
- 8-13 MERCURY BUTTER STILL
- 8-14 MERCURY TREATMENT SYSTEM (INCLUDING CARBON ABSORPTION BEDS)
- 8-15 MERCURY PROCESS SEWER, TRENCHES, AND SUMPS
- 8-16 DITCH BELOW MERCURY TREATMENT SYSTEM
- 8-17 #7 CIRCUIT HYDROGEN GAS PURIFYING SYSTEM
- 8-18 MERCURY WASTEWATER COLLECTION TANKS
- 8-19 WEAK CAUSTIC WASTE STORAGE TANK
- 8-20 PROCESS SEWERS IN CAUSTIC AREA
- 9-1 STORAGE FACILITY/HOPPER
- 9-2 FORMER BOTTOM/FLY-ASH-LAGOON-(SOUTH-OF-POWERHOUSE)
- 9-3 BOTTOM/FLY ASH LAGOON
- 9-4 COAL PILE RUNOFF COLLECTION SYSTEM

DENOTES BOUNDARY LOCATIONS FOR GEOGRAPHIC AREAS.



SCALE
0 200 400
1"=400'

NOTE:
ALL SEWER SYSTEMS ARE DESIGNATED WITH A △ TO SHOW A GENERALIZED LOCATION WITHIN THE APPROPRIATE AREA.

FIGURE 4-9

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	SWMUs LOCATED IN AREAS 7,8 AND 9
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/09/92 DR.: R.C. LIPP SCALE: 1"=400' DWG. NO. 05166-B2

- 200 gal. of bis (2 ethyl hexyl)-p-phenylene diacetate was produced in 1959. The material was sold.
- Maleic anhydride was produced in 1957. Disposal practice is unknown.
- 326,000 pounds of polyether polyol were produced and shipped to PPG paint division from 1959-1963.
- 35 runs of 16-24 hours each at 220 lb/hr of polychloropentanes (hexachloro-cyclopentadien) were conducted. Waste material from this process could have entered the sewer system.

Based on the preceding information, this unit and area will be included for investigation in the RFI Work Plan. The location of this AOC is presented on Figure 4-10.

4.8 AREA 8: CHLORINE AND CAUSTIC PROCESS AREA

This area is centrally located in the Natrium Facility and contains the chlorine and caustic process operations. The boundaries for this area were chosen to include both process areas because the process and waste treatment operations in both are interdependent. The former mercury surface impoundment site is also located in this area.

4.8.1 Process History

4.8.1.1 Chlorine Processes

Chlorine is produced at the PPG Natrium facility using two different production processes: the mercury cell process and the diaphragm cell process.

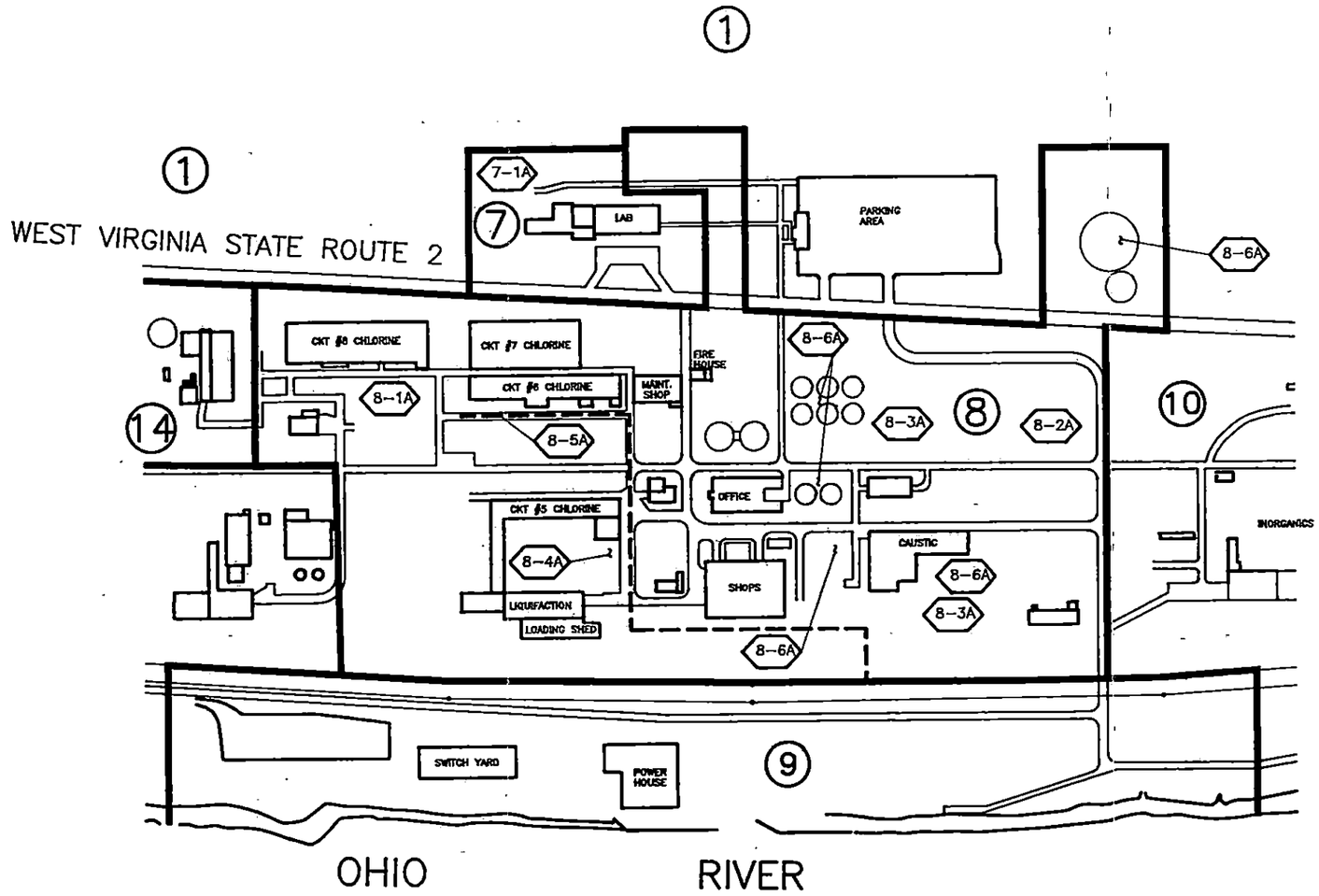
Mercury Cell Process: The mercury cell process produces chlorine through the electrolytic reaction of brine solution saturated with sodium chloride in the presence of elemental mercury. Products of this reaction are a solution of 50 percent caustic soda, depleted brine, hydrogen gas and chlorine. Figures 4-11 through 4-15 present a general flow diagram of the mercury cell process and more detailed flow diagrams of the various product and waste treatment systems associated with this process.

The chlorine gas produced in the mercury cell process is combined with chlorine produced in the diaphragm cell process and is cooled, compressed, dried (water vapor is removed), and liquified for storage. Some of the chlorine gas is also utilized in other production processes (such as the MCB processes) at the Natrium facility. The caustic soda solution produced in the mercury cell process is sent via pipeline to the facility's caustic department for further processing (See Section 4.8.1.2 for a description of the caustic processing system). The hydrogen gas produced by this process is cooled, compressed, and treated to remove mercury vapor before it is sent to the ammonia department or the plant boiler house, where it is used as a raw material or fuel, respectively. (See Section 4.3.1 for a description of the ammonia process.) Figure 4-12 presents a flow diagram of the chlorine treatment process while the (mercury) hydrogen treatment process flow diagram is presented in Figure 4-13.

The waste materials produced by the mercury cell process include process wastewaters containing mercury, cleaning wastewaters, raw material and product spills, and solid wastes such as used equipment and personal protective equipment contaminated with mercury. The process wastewaters, cleaning wastewaters, and spills are treated in the mercury treatment system, which removes mercury as mercury sulfide sludge. The resulting treated wastewater is passed through a carbon adsorption

JOB NO.: 0516600100 PLOT SCALE: 1=400

STARTED ON: 8/04/92 REVISED: 9/30/92



LEGEND

AOCs

- 7-1A R & D AREA NORTHEAST OF LAB
- 8-1A FORMER BHC PRODUCTION AREA
- 8-2A GASOLINE STORAGE FACILITY
- 8-3A CAUSTIC TANK CAR AND TRUCK LOADING AREA
- 8-4A GRAPHITE CELL CONSTRUCTION AREA
- 8-5A CHLORINE AREA (FORMER) ONCE THROUGH SEWER
- 8-6A ALL CAUSTIC STORAGE TANKS

CHLORINE AREA (FORMER) ONCE THROUGH SEWER

DENOTES BOUNDARY LOCATIONS FOR GEOGRAPHIC AREAS.

SCALE

0 200 400

1"=400'

FIGURE 4-10

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AOCs LOCATED IN AREAS 7,8 AND 9	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/09/92	DR.: R.C. LIPP
	SCALE: 1"=400'	DWG. NO. 05166-B2A

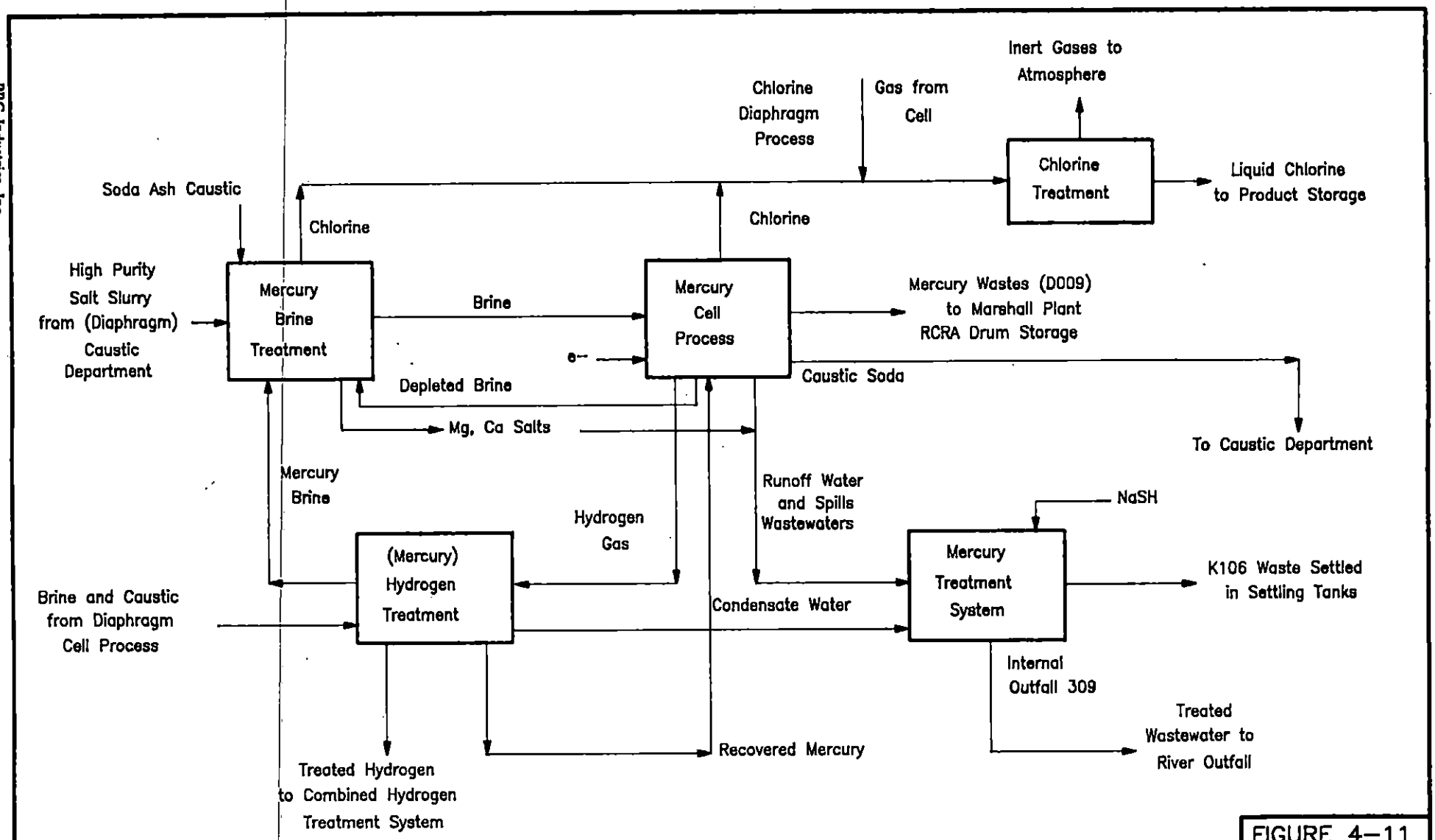


FIGURE 4–11

PPG INDUSTRIES, INC. NATRIUM PLANT
NEW MARTINSVILLE, WEST VIRGINIA

AREA B
CHLORINE–CAUSTIC AREA – OVERFLOW DIAGRAM FOR MERCURY CELL CHLORINE PROCESSES

ICF KAISER ENGINEERS
PITTSBURGH, PA

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

DATE: 9/30/92 DR.: B. SNYDER
SCALE: N.T.S. DWG. NO.:PPG–20

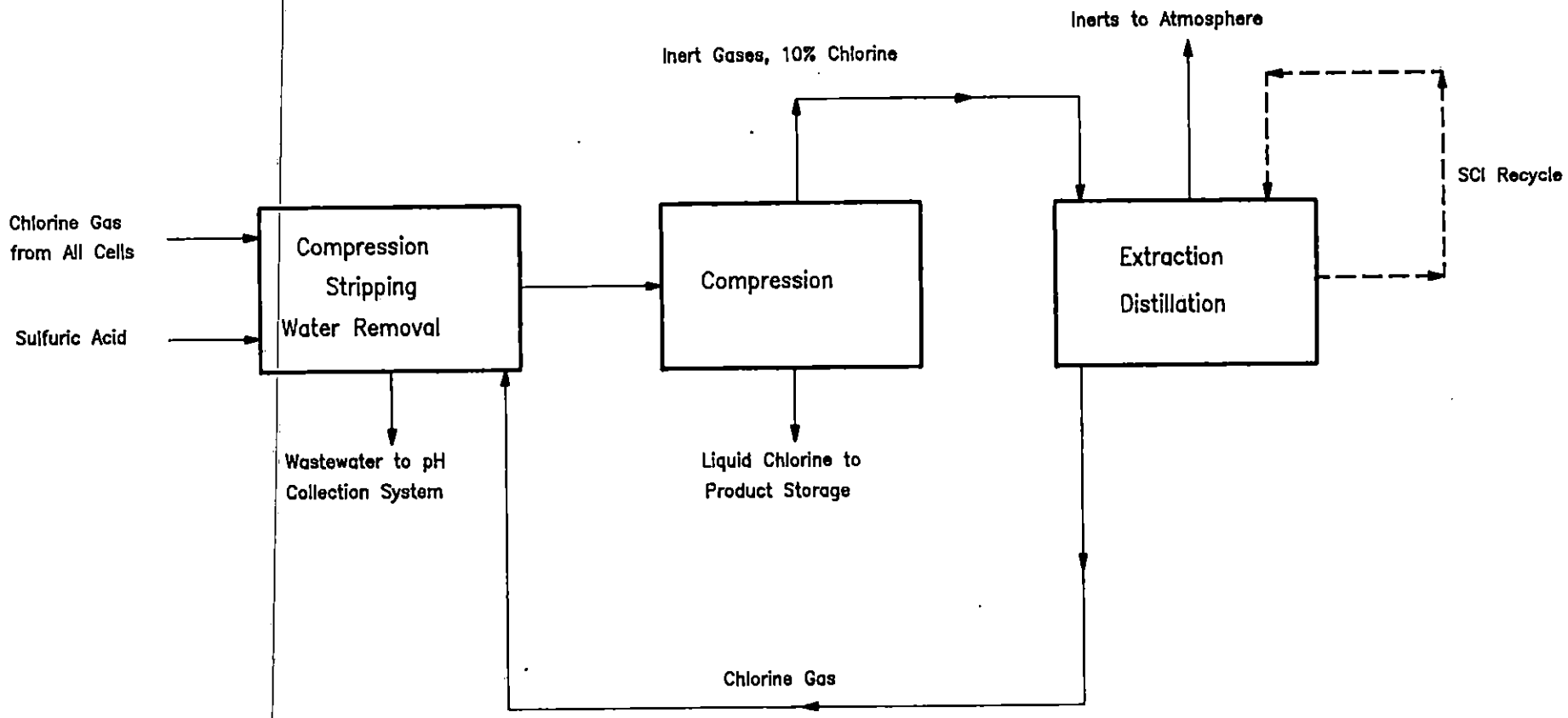


FIGURE 4–12

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE–CAUSTIC AREA CHLORINE TREATMENT SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG–24

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

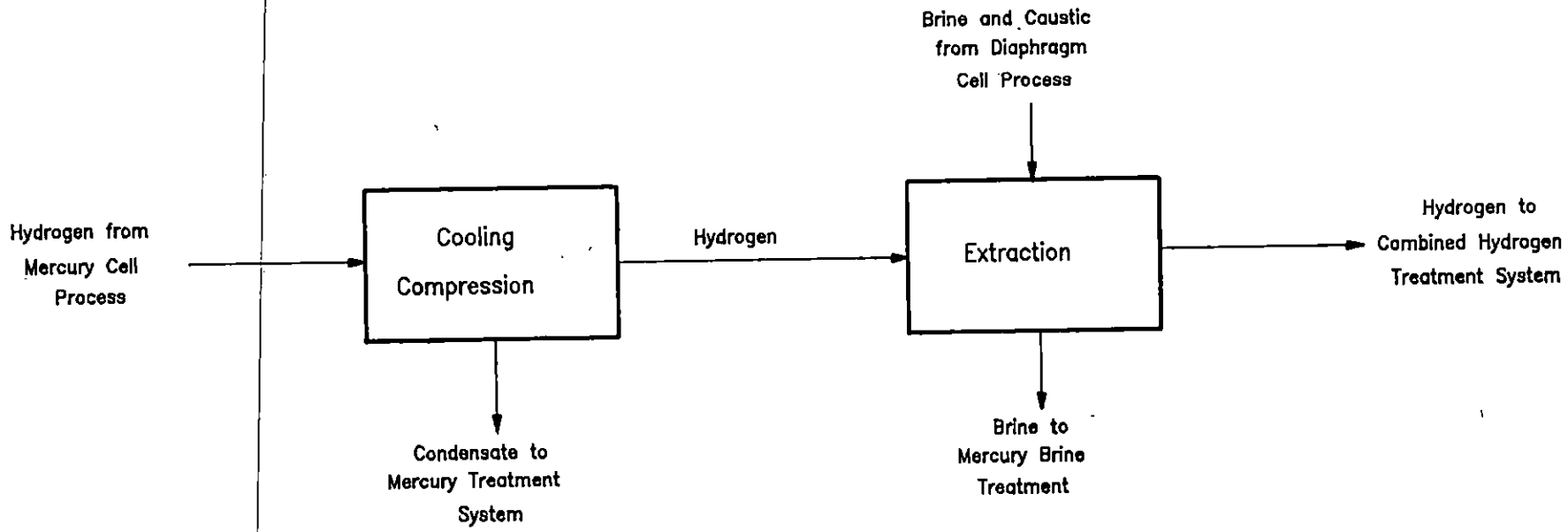


FIGURE 4-13

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE-CAUSTIC AREA (MERCURY) HYDROGEN TREATMENT SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG-21

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

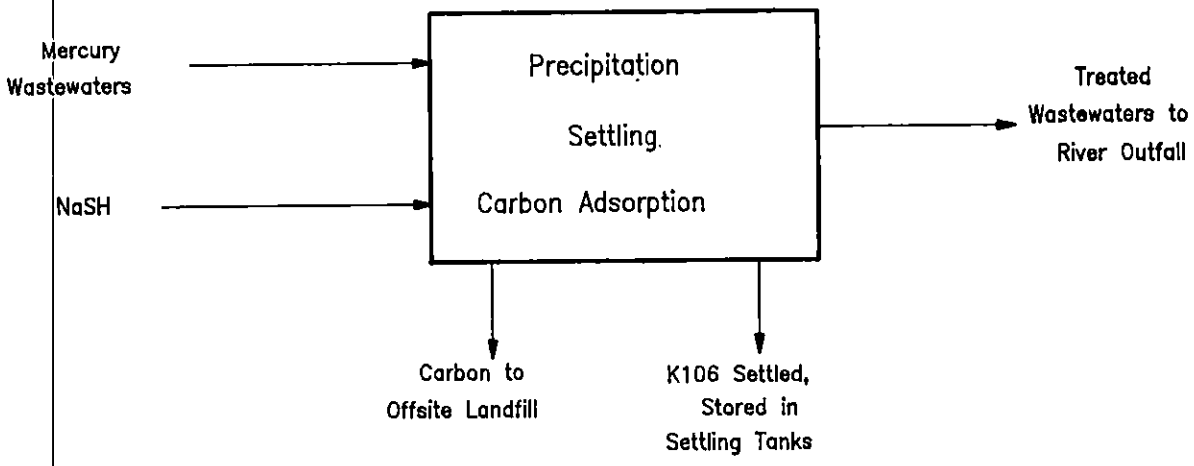


FIGURE 4-14

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE-CAUSTIC AREA MERCURY TREATMENT SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.:PPG-23

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

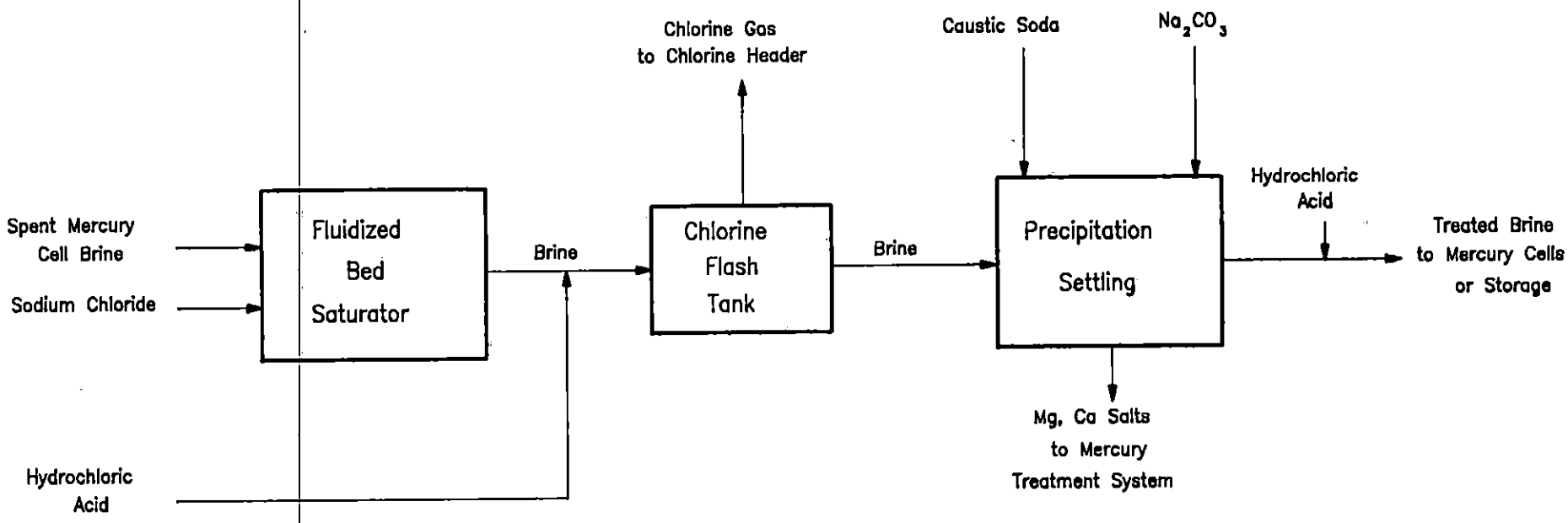


FIGURE 4–15

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE–CAUSTIC AREA MERCURY BRINE TREATMENT SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/30/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.:PPG–22

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

bed and discharged via a permitted outfall to the Ohio River. The mercury sulfide sludge is settled and stored in two large settling tanks which are cleaned every few years. This settled mercury sulfide sludge is a listed RCRA hazardous waste, K106, and is disposed at a RCRA permitted, offsite disposal facility. Formerly, the mercury sulfide was settled and stored in a RCRA permitted surface impoundment (located near the current guardhouse) prior to carbon adsorption treatment and discharge of the treated wastewater. Figure 4-14 presents a flow diagram of the mercury treatment system.

The caustic solution is sent to the caustic department where it is either shipped directly to customers or is concentrated to 70% and then shipped. Wastes produced from the brine treatment are sent to the mercury treatment system. A stream of depleted brine from the mercury cell process is sent to the caustic department where it is used to slurry solid salt. This resaturated brine is used as a raw material in the mercury cells. Figure 4-15 presents a flow diagram of the mercury brine treatment system. Solid wastes, such as mercury-contaminated trash and personal protective equipment are drummed and stored in a permitted drum storage area (located in the old Marshall Plant area) for later disposal at a RCRA permitted facility.

In the past, before the current mercury treatment system was constructed, mercury wastewaters were processed in the mercury surface impoundment to allow settling of mercury contaminants prior to discharge of the wastewaters to the Ohio River. In addition, stormwater runoff and some spills also were discharged to the Ohio River, prior to the installation of the current process and stormwater collection system in the mercury cell area.

Diaphragm Cell Process: The second process used to produce chlorine at the Natrium facility is the diaphragm cell process, employing both asbestos diaphragms and synthetic diaphragms. Figures 4-16 through 4-20 present a general flow diagram of the diaphragm cell process and flow diagrams of the various product and waste treatment systems associated with this process.

In the diaphragm cell process, saturated brine is electrolyzed to produce chlorine gas. The chlorine gas is combined with the chlorine product stream from the mercury cell process for treatment and liquefaction. The diaphragm cell process also produces hydrogen gas and a caustic soda brine solution. The hydrogen gas is cooled, compressed, and combined with the treated mercury cell hydrogen for use in the ammonia production process or in the boilers. The caustic soda brine solution is sent to the caustic department for further processing.

The wastes produced by the diaphragm cell process include asbestos wastewaters, cleaning wastewaters contaminated with asbestos, and corrosive wastewaters generated during cleanup of caustic product spills. The asbestos wastewaters are treated to remove asbestos and heavy metals (coal pile run-off also centers this system for treatment) and then discharged via permitted NPDES Outfall 209 to the pH collection system. The pH collection system is a series of tanks in which wastewaters from various process areas at the Natrium plant are combined prior to discharge. The various wastewaters have different pH's and some contain NaSH (which will neutralize residual chlorine). This equalization of wastewaters serves to neutralize the final effluent stream from this collection before it is discharged to the river. The asbestos solids and sludges generated by the asbestos treatment system are settled, collected, and sent to a permitted, offsite asbestos disposal facility. Figure 4-18 presents the asbestos treatment system while the pH collection system is presented in Figure 4-19.

The brine used in the diaphragm cell process is produced by dissolving sodium chloride found in a salt layer approximately 6700 feet beneath the surface of the Natrium facility. The brine is generated by pumping water into the salt layer via injection wells, with the resulting brine discharging from downgradient extraction wells. Oil was used during development activities to control the direction

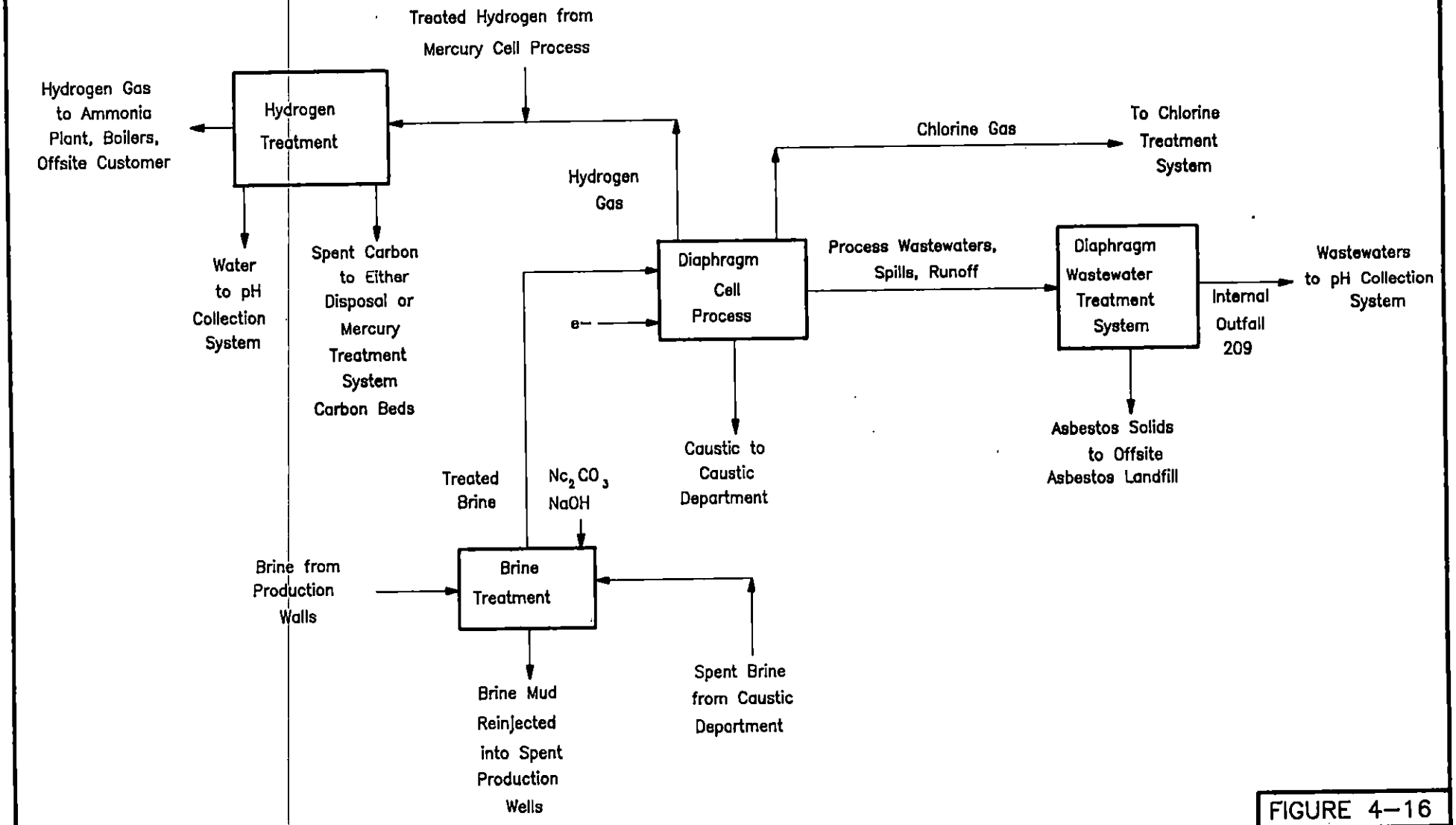


FIGURE 4–16

PPG INDUSTRIES, INC. NATRIUM PLANT
NEW MARTINSVILLE, WEST VIRGINIA

AREA B
CHLORIDE–CAUSTIC AREA
OVERALL FLOW DIAGRAM FOR DIAPHRAGM CELL CHLORINE PROCESSES

ICF KAISER ENGINEERS
PITTSBURGH, PA

DATE: 9/30/92 | DR.: B. SNYDER
SCALE: N.T.S. | DWG. NO.:PPG–15

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 9/30/92 REVISED: 0/00/00

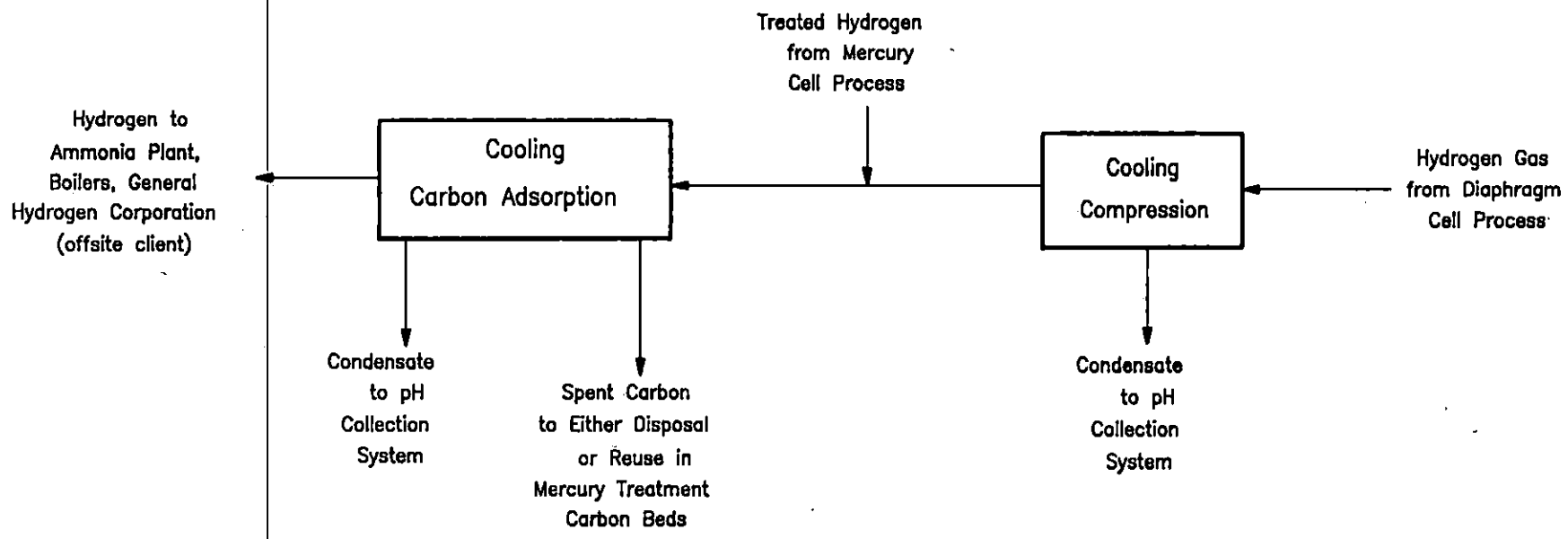


FIGURE 4–17

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE–CAUSTIC AREA HYDROGEN TREATMENT SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG–18

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

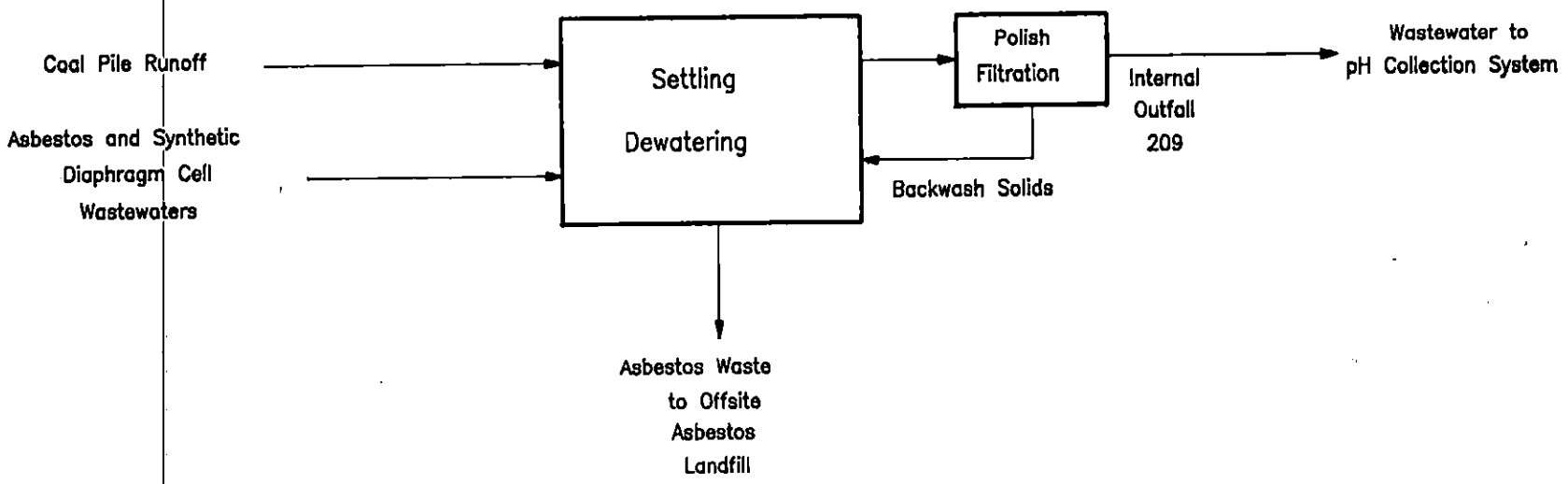


FIGURE 4-18

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE-CAUSTIC AREA DIAPHRAGM WASTEWATER TREATMENT SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.:PPG-16

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

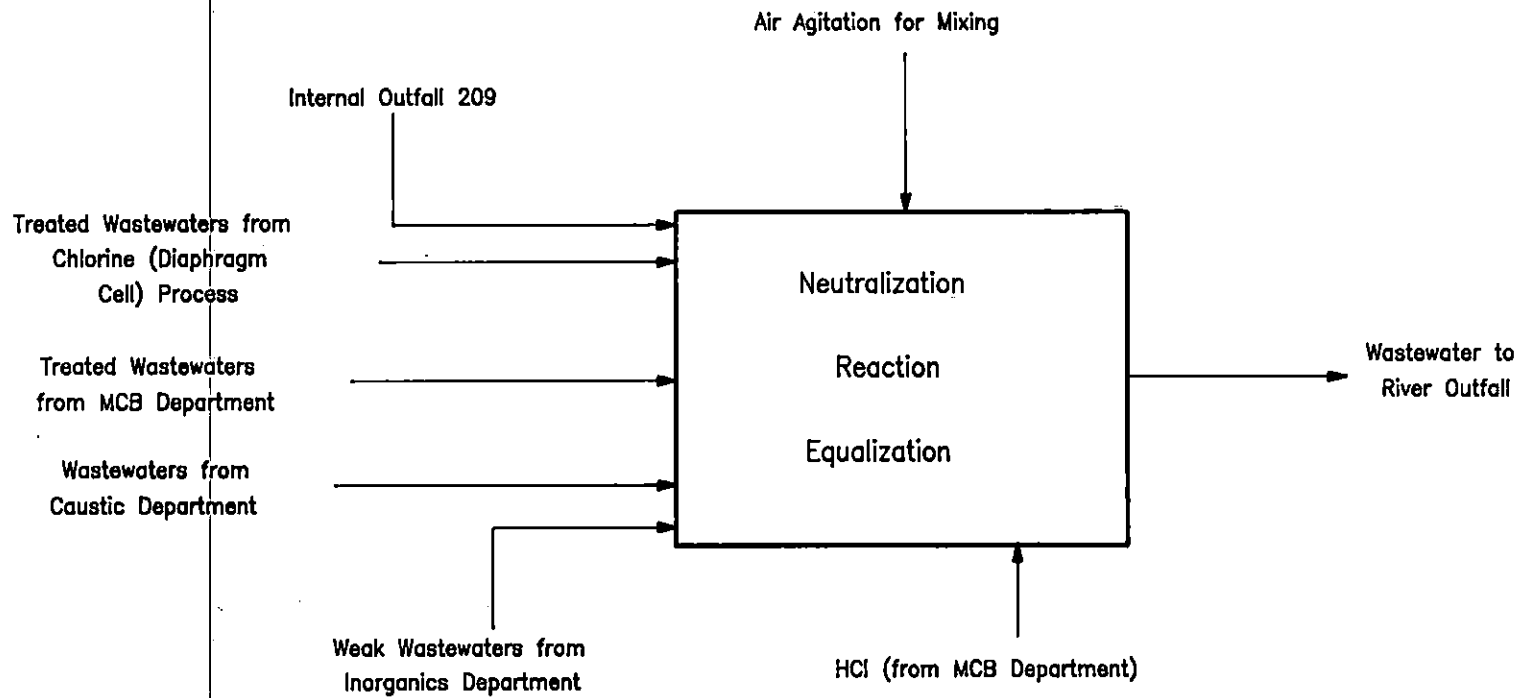


FIGURE 4-19

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE-CAUSTIC AREA pH COLLECTION SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.:PPG-19

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

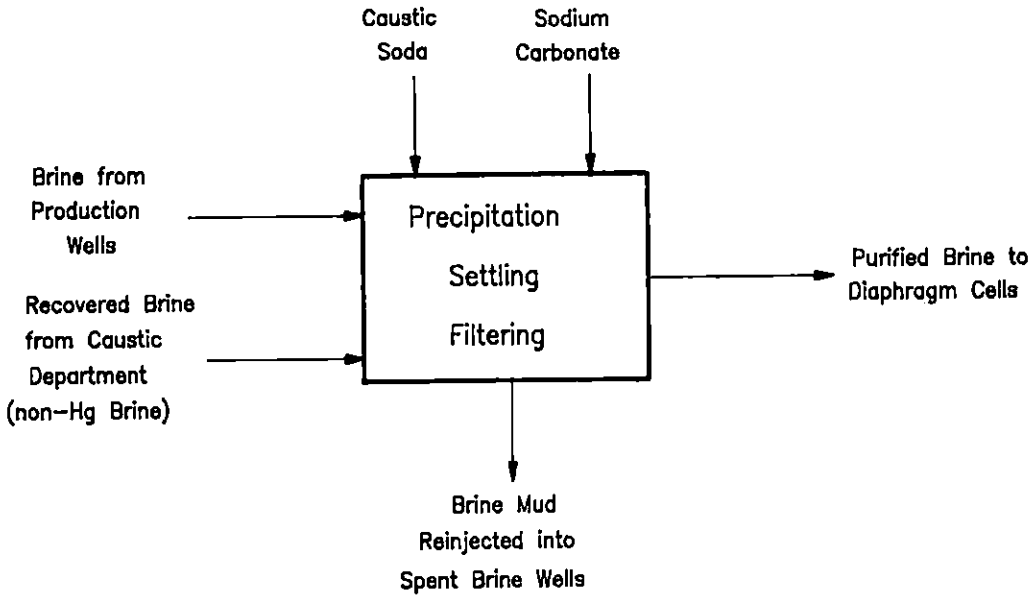


FIGURE 4-20

PPG INDUSTRIES, INC. NATRIUM PLANT
NEW MARTINSVILLE, WEST VIRGINIA

AREA 8
CHLORINE-CAUSTIC AREA
RAW BRINE TREATMENT SYSTEM

ICF KAISER ENGINEERS
PITTSBURGH, PA

DATE: 10/1/92 | DR.: B. SNYDER
SCALE: N.T.S. | DWG. NO.:PPG-17

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

of the salt cavity and brine flow in the salt layer. This practice has been discontinued due to new well drilling technology. The raw brine solution is treated with caustic soda and sodium carbonate to precipitate magnesium and calcium contaminants and then is saturated with sodium chloride before it is sent to the diaphragm cells as a raw material. The magnesium and calcium sludges, called brine muds, are injected into spent brine production wells for disposal. (These disposal wells have UIC permits for this operation.) Figure 4-20 presents a flow diagram of the brine treatment system.

The Natrium facility formerly used graphite electrodes anchored with lead in the diaphragm cells. The graphite electrodes produced chlorinated organic wastes in the chlorine product stream, which were removed in a system called the tracifier system. The waste produced by the tracifier system, RCRA waste code K073, was at first disposed in the old Marshall Plant landfill and then was later sent to an offsite, RCRA permitted facility. The maintenance activities associated with anchoring the graphite electrodes with lead, which included both pouring molten lead and demolition of old lead anchoring material, produced lead-contaminated wastes, RCRA waste code D007, which were disposed at an offsite, RCRA permitted facility. The maintenance activities were performed on a concrete pad inside the buildings that housed the graphite diaphragm cells. (These buildings have since been demolished; however, some lead contamination may still remain at the former maintenance area site.) The Natrium facility no longer uses graphite electrodes in their diaphragm cells and therefore K073 and D007 wastes are no longer produced.

4.8.1.2 Caustic Processes

The solutions containing caustic soda from the mercury cell process and caustic soda brine produced by the diaphragm cell process are further processed in the Natrium facility's caustic department to separate the depleted brine and concentrate and purify the caustic soda product prior to shipment or use elsewhere at the facility. The caustic solutions from the mercury and diaphragm cell processes are treated in separate systems. (The mercury cell caustic soda is also much more concentrated than the diaphragm cell caustic soda and is shipped without further processing or is concentrated prior to shipment.)

The caustic soda brine solution from the diaphragm process is separated and the caustic is concentrated using processes involving evaporation, centrifugation, and settling. Figures 4-21 and 4-22 present the mercury cell and diaphragm cell caustic treatment systems respectively. The recovered salt from the diaphragm cells is sent to the brine treatment system where it is combined with raw brine from production wells and treated before reuse as a raw material in the diaphragm cells. A portion of the solid salt is sent to the Mercury Cell Process and a portion is sent to the Diaphragm Cell Process.

The caustic soda from the mercury cell process is stored in tanks in the caustic area prior to shipment. A portion of the concentrated caustic soda produced from the diaphragm cell process is further treated to produce a high purity caustic product called DH50. Salt is removed by liquid ammonia absorption and a majority of the miscellaneous metal salts are removed via electrolysis.

Figure 4-23 presents a flow diagram of the DH50 process. The portion of the concentrated caustic soda product from the diaphragm cell process that is not used to produce DH50 is stored in storage tanks located in the caustic department area prior to shipment or reuse in other areas of the plant.

The wastes produced by the caustic processes include process wastewaters, cleaning wastewaters and caustic spills, and stormwater runoff from the storage areas. The process wastewaters, cleaning wastewaters, and spills from the mercury cell caustic process areas are sent to the mercury treatment system for treatment prior to discharge. The process wastewaters, cleaning wastewaters, and spills

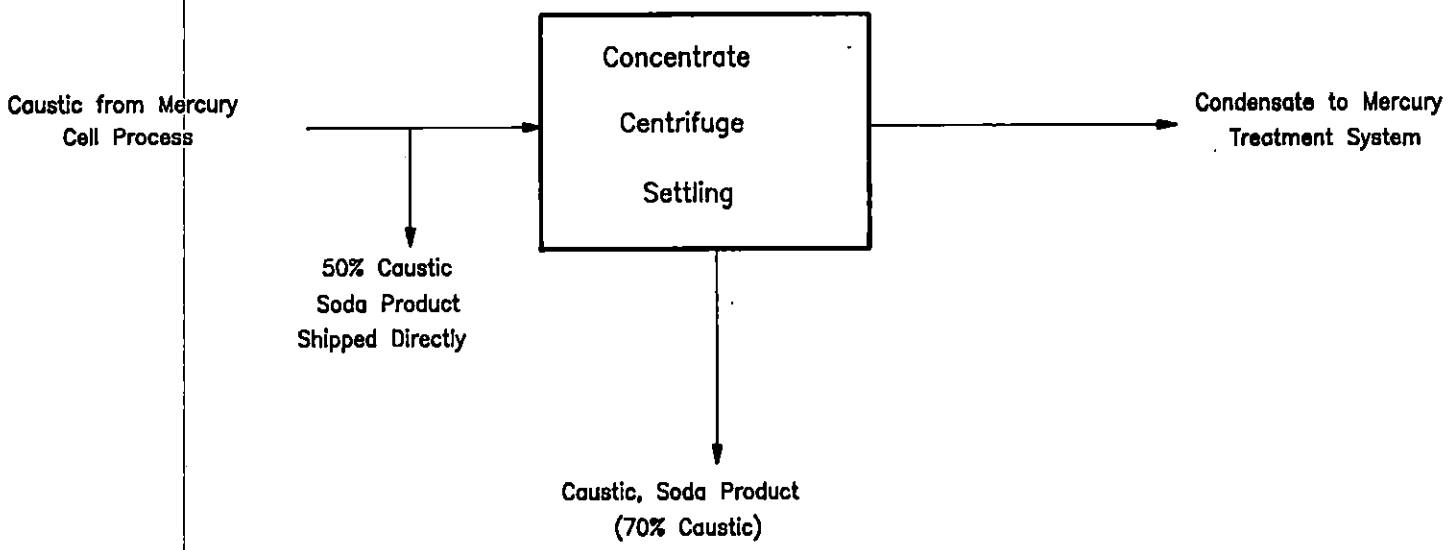


FIGURE 4-21

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE-CAUSTIC AREA MERCURY CELL CAUSTIC TREATMENT SYSTEM	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG-25

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

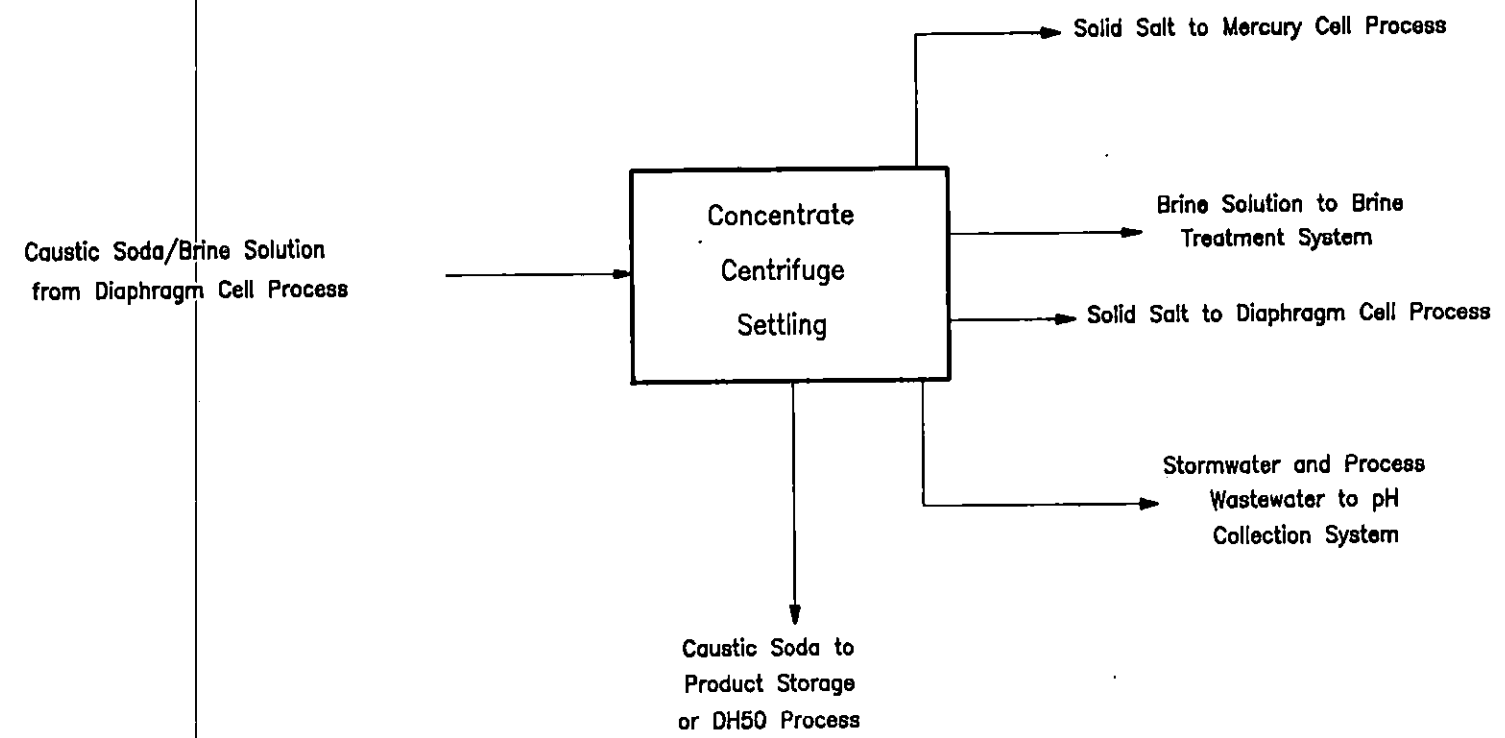


FIGURE 4-22

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE-CAUSTIC AREA DIAPHRAGM CELL CAUSTIC TREATMENT SYSTEM
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92 DR.: B. SNYDER SCALE: N.T.S. DWG. NO.:PPG-26

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

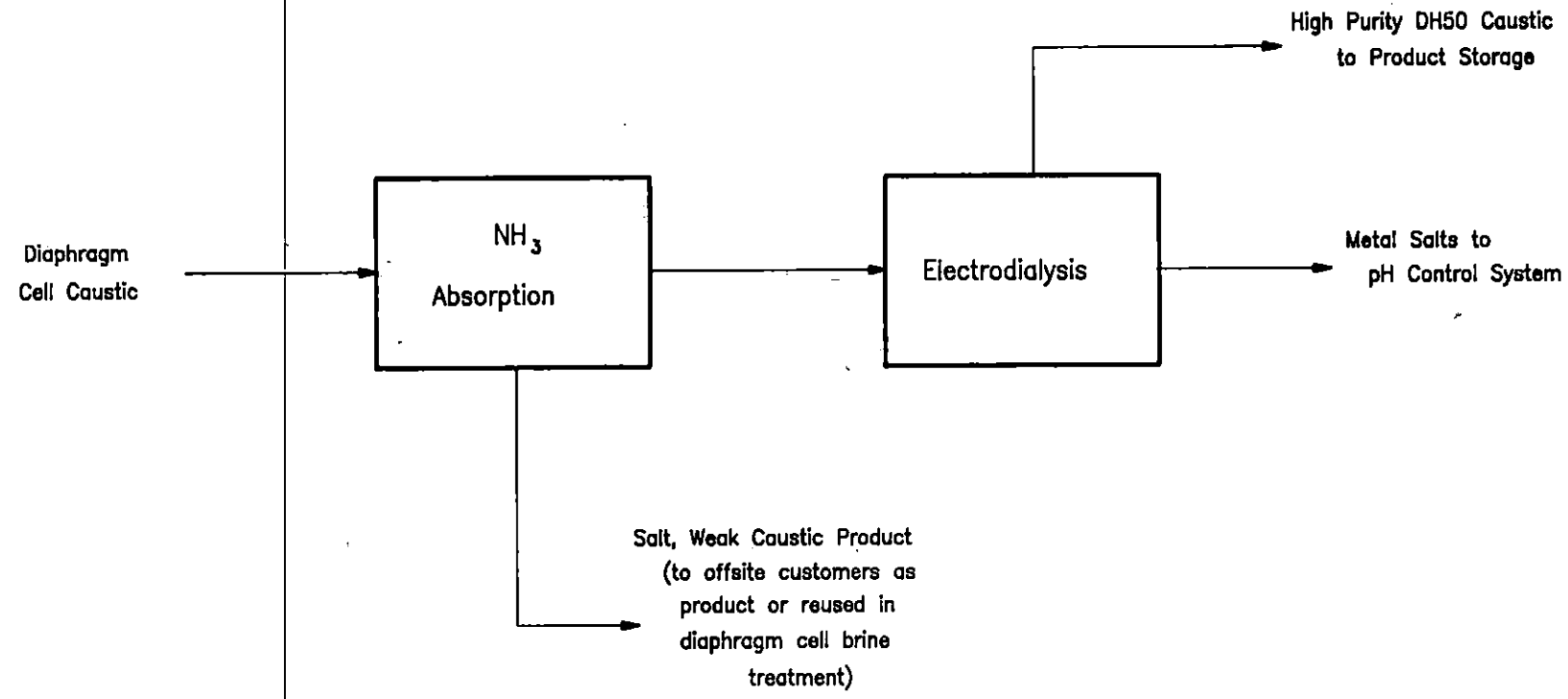


FIGURE 4–23

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 8 CHLORINE–CAUSTIC AREA DH50 CAUSTIC PROCESS	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.:PPG–27

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

from the other caustic process areas are sent to the pH collection system for treatment before they are discharged.

In the past, the process tanks, storage tanks, and process sewers have developed leaks which resulted in discharges of caustic solutions of various concentrations to the surrounding environment. However, with the installation of new process sewers, stormwater sewers, and containment areas around tanks, these releases have been reduced or eliminated.

4.8.1.3 Past Process - BHC Processes

Benzene hexachloride (BHC) was produced at the Natrium plant in the 1950s. BHC was produced by reacting chlorine with benzene in a liquid phase reactor (no catalyst). Unreacted benzene was vaporized from the reactor effluent and recycled to the reactor. The BHC mix was flaked and packaged in drums and shipped to customers. There were also some bulk shipments made in trucks and barges. Bulk storage was generally outdoors in an uncontained area. The primary use of BHC was an insecticide, primarily for control of the cotton boll weevil. There were no by-products, and any other compounds that may have been formed were not separated from the product.

Two known open air storage piles for BHC product were used at the facility; one located adjacent to the MCB process area and one located beside the river near the current PELS® process area. These storage areas consisted of curbed storage pads on which the solid BHC product was stored. It is not known what types of controls (if any) were used for stormwater runoff and product spills.

Production ceased in 1961, although some shipments were made as late as 1964.

4.8.2 Closure Activities

The Mercury Surface Impoundment, a former RCRA facility, was closed in 1989 under a plan approved by USEPA. The closure sampling and results were also approved by USEPA. Post closure monitoring is ongoing. In addition, the K073 Waste Tank Car was closed under RCRA in 1986.

The Tracifier Treatment System was eliminated by the development of a new technology hazardous waste system. No evidence of spills or releases was evident during removal of this system.

In 1983, PPG made a major multi-million dollar upgrade of the process trench and sump system in the Caustic Area. As part of this upgrade, building foundations and floors were replaced and upgraded and sewers and sumps were replaced or lined to prevent the release of caustic to the environment.

Former Diaphragm Circuits 1-4 were demolished in the 1985. (See Section 4.8.3 for process description). As part of the demolition process, soil sampling was done to determine the residual lead concentrations in the soils. Testing showed lead to be below applicable standards.

The lead wastewater treatment tanks, which are part of the Lead/Asbestos Treatment System SWMU, were decontaminated and taken out of service in 1986. This eliminated future lead waste from being handled at these tanks.

4.8.3 Potential SWMUs

Sixteen potential SWMUs and four previously identified SWMUs are located in Area 9. The four units previously identified in the RFA include the Mercury Surface Impoundment (MSI) (RFA No. 1), the Lead Wastewater Collection Tanks (RFA No. 13), the Mercury Wastewater Collection Tanks

(RFA No. 14) and the Carbon Absorption Filters (RFA No. 15) associated with the MSI. The twenty units are listed below. The locations of these units are presented on Figure 4-9.

D009 Satellite Accumulation Area (SWMU No. 8-1): The potential for soil and groundwater contamination at this unit can be attributed to spills or leaks in drums containing D009 waste. However, this unit is inspected by RCRA yearly and exhibits no evidence of release.

Area of K073 Waste Tank Car (SWMU No. 8-2): This K073 RCRA regulated facility operated from May 7, 1975 until January 15, 1986. The facility consisted of a 4,150 gallon tank car used to store chlorinated hydrocarbon waste. The tank car was emptied, cleaned, and disposed of in October 1985 according to the approved interim status closure plan. There is no potential for release from this area.

Tracifier Treatment System (SWMU No. 8-3): This unit no longer operates at the plant. Through 1984 organics were removed from the cell concentrated chlorine by liquid chlorine scrubbing. Organics were then removed for disposal. Tracifier wastes were taken to the Marshall Plant Waste Pond for disposal until 1977 (when wastes were taken offsite for disposal).

Chlorine Cooling/Drying System (SWMU No. 8-4): The condensate water generated by this system is discharged directly to a vacuum recovery unit to recover chlorine. This water then goes to Outfall 009.

Lead/Asbestos Treatment System (SWMU No. 8-5): Before current treatment procedures, cells were taken off line, and the asbestos diaphragm was water blasted and the slurry collected. This slurry, containing lead and asbestos waters, entered a surge tank and was pumped to the lead/asbestos treatment system. From here the waste went to a clarifier where NaSH was added to promote a reaction forming lead sulfide. The lead sulfide would settle in the clarifier, and eventually the sludge would be transported offsite to a hazardous waste landfill. Prior to 1977, wastewater generated in the asbestos circuits went directly to the Ohio River.

Currently, a filter press is used to dewater the asbestos. This material is transported offsite to a permitted disposal facility. The filtrate flows to the asbestos diaphragm treatment system and then to pH treatment before discharge to Outfall 009.

The lead wastewater collection tanks, mentioned as SWMU No. 13 in the RFA, are included in this treatment system. Since lead waste is no longer generated at this plant, these tanks no longer operate as a lead collection unit. Currently, this system treats the wastewater from the diaphragm cell chlorine circuits. Lead was used in the construction of the graphite anode circuits. Molten lead was poured into the cell to anchor the graphite anode. As the cells were used, the lead would combine with the brine solution creating a lead deposit on the cell diaphragms. When the cells were dismantled, the diaphragms containing lead and asbestos were washed off the cell and sent to treatment. The Lead Wastewater Collection Tanks consisted of two tanks, each part of the system designed to dispose of lead sulfide effluent from the chlorine producing cells. This unit is located in the diaphragm brine treatment area. These tanks began operation in 1975 and were decontaminated in 1986.

Use of the tanks was temporarily discontinued in 1984 so that all lead wastes could be removed and disposed of offsite. The chlorine process was modified to eliminate the use of lead and graphite anodes. Currently, no lead waste is produced at the site. The tanks were cleaned internally and coated with a protective paint in 1984. The tanks remain in service as part of the asbestos treatment system. The waste tanks currently remove asbestos from the cell room wastewater generated in the asbestos diaphragm circuits No. 6 and No. 8.

There are no documented releases from this system. However, the potential exists that leaks or releases may have occurred in the past.

Oil Storage Tank Area (for #1 Brine Field Development) (SWMU No. 8-6): The oil stored in these tanks was previously used during cavity development activities for the No. 1 Brine Field as described in Section 3.1.2.1.

pH Collection System (SWMU No. 8-7): The pH collection system serves as a large buffer. It accepts wastewater from the MCB department, alkaline waters from caustic and inorganics, waters from the chlorine process sewer, and circuit cell room water from circuits No. 6 and No. 8 prior to discharge to NPDES Outfall 009. There are no documented releases from this unit.

Non-Mercury Process Sewer, Trenches, and Sumps (SWMU No. 8-8): All process sewers, trenches and sumps within the chlorine process area that are not associated with the Mercury Circuit considered part of this unit. This unit does not include the caustic process sewer system. The only potential for release from this unit is through leaks or releases. However, there is no documented evidence stating that this unit has leaked or released any contaminants into the environment.

Brine Treatment System (SWMU No. 8-9): The brine treatment system purifies the extracted brine for use in the chlorine process. Metals such as calcium and magnesium are precipitated out of the brine through the addition of caustic and carbonate. The brine waste stream from caustic manufacture is also treated at this location. Impurities settle in clarifiers. The brine is then passed through eight anthracite coal filters. These filters are periodically backwashed, and solids in the brine settle in the clarifier. Polished brine waters enter the finished brine tank. All impurities leave the treatment system as brine mud. The mud is sent to a holding tank where it is stored until it is reinjected into a reinjection well.

The only potential for release from this unit is through leaks. There are no documented releases from this unit. If a leak occurs the potential material released include salt and precipitated non-hazardous materials.

Former Circuit 1-4 Site (SWMU No. 8-10): Circuits 1 to 4 were graphite diaphragm circuits using lead anchoring. These circuits no longer exist. During the life of these circuits, the carbon anodes would deteriorate and be replaced. The chlorine cells were demolished in this area, releasing lead, mastic and tin to the concrete floor. Construction of replacement cells was also performed at the north end of No. 4 circuit. Replacement cell construction would include the pouring of molten tin, mastic and lead. When these circuits were demolished, all the cells were destroyed in this area. Solvents were also used for removal of mastic.

Routine and systematic releases of lead contaminated wastewater may have occurred in this area. Part of this area was also used for demolition of graphite diaphragm cells. This activity represents a potential for release to soil. Samples collected during the demolition of the buildings and foundation in 1985 exhibited lead levels within acceptable limits.

Closed Mercury Surface Impoundment (SWMU No. 8-11): The Mercury Surface Impoundment previously located in this area was closed under RCRA guidance. This unit served as a sodium chloride brine reservoir from approximately June 1942 to 1960. During this period the impoundment was lined with two layers of 6 inch and 3 inch concrete separated with two layers of mastic coated fabric. In 1970 the facility was refurbished, and a low permeability synthetic (Hypalon) liner was installed. A 2 inch to 4 inch layer of bentonite clay and a second layer of Hypalon were installed following the periodic cleaning of the impoundment in 1978. The impoundment was then used to contain waste solids from the plant's mercury wastewater collection tanks until its closure in 1989.

Fluids which entered the unit during this usage had a sodium chloride brine type composition along with detectable concentrations of dissolved mercury. The mixed mercury waste within the pond was settled as mercury sulfide and the resultant clarified liquid was treated by carbon filtration prior to discharge via Outfall 009. The carbon absorption filters which accepted supernatant from the MSI no longer exist at the Natrium plant. These filters were mentioned in the RFA.

During this unit's operation, it is probable that past releases of brine solution occurred as indicated by past monitoring well data. However, this unit has been formally closed under an approved RCRA closure plan and currently has a very low, if any, potential for release to groundwater.

Mercury Brine Treatment System (SWMU No. 8-12): Brine used in the mercury cell process is treated for the removal of impurities, such as mercury. This brine is recirculated through the mercury cell process. This system is enclosed and has a low release potential.

Mercury Butter Still (SWMU No. 8-13): This unit is located on the second floor of the mercury chlorine circuit. It rests in an entirely contained area. The waste collected in this unit is collected in gallon containers and is generated in small quantities. This unit has virtually no potential for an uncontained release.

Mercury Treatment System (Including Carbon Absorption Filters) (SWMU No. 8-14): Process wastewaters and spills are treated in this unit, as described in Section 4.8.1.1. The carbon absorption filters are open top tanks with an activated carbon filter medium. Discharge from the tanks is to Outfall 009. These units were placed in operation as a replacement for the MSI.

Mercury Process Sewer, Trenches and Sumps (SWMU No. 8-15): The only potential for release from this unit is through leaks or releases within the mercury circuit area. However, there is no documented evidence stating that this unit has leaked or released any contaminants into the environment.

Ditch Below Mercury Treatment System (SWMU No. 8-16): In the past this unit contained visible mercury contamination. This contamination has since been removed; however, it is not known whether contamination presently exists in the soil beneath or near this ditch. This soil presents a potential source of release.

Circuit No. 7 Hydrogen Gas Purifying System (SWMU No. 8-17): This unit recovers mercury which is entrained in hydrogen gas. There is limited potential for release, on at least one occasion, mercury was observed in soil excavation in the area. Contaminated material was collected and sent offsite to a RCRA landfill. Containment was installed in this area in 1968 and rebuilt in 1981.

Mercury Wastewater Collection Tanks (SWMU No. 8-18): This unit consists of three enclosed tanks that rest on a paved area with curbing. There is documented groundwater contamination in the area. This unit was identified as SWMU No. 14 in the RFA.

Weak Caustic Storage Tanks (SWMU No. 8-19): These tanks store caustic solution collected in the trench system located in the caustic process area. The only potential for release from this unit is through leaks consisting of caustic material with a concentration of less than 5%. This unit is located in a contained area and has no history of releases.

Process Sewers in Caustic Area (SWMU No. 8-20): Two sump and trench systems currently operate within the process area. The process sump and trench system was installed and upgraded in 1983 and currently collects process wastewater with a caustic concentration greater than 5%. All other wastewater goes to the trench sump system and then to pH treatment. Prior to 1983, leakage

occurred in the old sump and trench system causing the silica sand beneath the building to dissolve. Compaction grouting was used to fill these voids in order to maintain the structural integrity of the building. Overflows from the tank fields went to the sewer.

Documented releases of caustic material have occurred from this unit in the past. During routine process operations, strong caustic material, with a concentration greater than 5%, leaked into the soil beneath the caustic process building.

4.8.4 Areas of Concern (AOC)

Six areas of concern are located within Area 8. They include the location of the former BHC production area (AOC No. 8-1A), a gasoline storage facility (AOC No. 8-2A), the caustic product loading area (AOC No. 8-3A), the graphite cell construction area (AOC No. 8-4A), the former storm sewer system located in the chlorine area (AOC No. 8-5A), and all caustic storage tanks (AOC No. 8-6A). Past releases have occurred in each of these areas to the extent where further investigation is deemed necessary. The locations of these AOC are shown on Figure 4-10. Additional information on these AOCs is presented as follows:

The Location of the Former BHC Production Area: The old BHC production plant. This plant was located near No. 8 chlorine circuit currently exists. Both alpha and beta cake benzene hexachloride (BHC) isomers were produced. Waste material was reported to be disposed offsite. A portion of the BHC building is currently used as a storage area for mercury flasks. Diaphragms for the No. 5 and No.6 circuit are also manufactured here. Wastewater is currently pumped from the BHC building sumps to the asbestos treatment system.

Several research and development pilot plants were built in the general vicinity of chlorine circuit No. 8. These plants produced various products during the late 1940's through 1954, including:

- Vinyl chloride produced using $HgCl_2$ catalyst in 1950
- BHC pilot plant produced benzene hexachloride
- MCB pilot plant produced monochlorinated benzene
- Aniline produced from 1952 to 1954

Disposal methods implemented for these materials are unknown.

Gasoline Storage Facility: This above ground tank stores gasoline which is used throughout the plant. Potential releases may have occurred in the past. This unit is located within a containment dike.

Caustic Product Loading Area: The area southwest of the caustic process area is used for the loading of caustic onto railroad tank cars. In the past every car, including mercury contaminated cars, was washed in this area. The caustic contaminated wastewater went directly into the sewer system. In the early 1980's, a sump system was installed. These sumps collected the wash water but overflowed on several occasions. Currently, only cars with no potential mercury contamination are washed. All washings are collected in sumps and then sent to the pH control system for treatment.

Chlorine Area (former) Once Through Sewer: The chlorine sewer system was located within this area. Wastewater entering this unit flowed directly to the Ohio River.

Caustic Storage Tanks: An assessment of aquifer conditions in the east field area was performed by Geraghty & Miller in February 1985. The groundwater extracted from well No. 58 located near the tanks was highly alkaline, dark in color and high in pH. This report indicated that the caustic plume present at the site can be controlled through the use of pumping wells. Pumping wells are currently

in use and appear to be controlling the caustic migration. However, throughout the history of this plant, roadway and surface subsidence has occurred. This occurrence may be attributed to broken or leaking process sump lines or tanks which released caustic material into the subsurface, thereby dissolving naturally occurring silica in the soil.

Graphite Cell Construction Area: Concrete chlorine cells were constructed in this area. Occasional releases of lead and mastic may have occurred during this process.

All of the units and areas mentioned above except for the Closed Mercury Surface Impoundment, the Mercury Butter Still, the Area of the K073 Waste Treatment Car, the D009 Satellite Accumulation Area, the pH Collection System, the Tracifier Treatment System, and the area of the former chlorine circuits 1 through 4 are recommended for further investigation in the RFI Work Plan.

4.9 AREA 9: POWER PLANT AREA

This area is directly south of Area 7 and includes steam and electric generation facilities. The present Bottom/Fly Ash Lagoon, the Former Bottom/Fly Ash Lagoon, the hopper associated with truck loading of flyash and the power house facility are contained within this area. The similarity of waste handled in this area and the geographic location of these operations suggested the placement of the boundaries.

4.9.1 Process History

This area has not been used for process purposes.

4.9.2 Closure Activities

In 1991, PPG installed a coal pile runoff collection system to eliminate runoff from the coal pile directly to the Ohio River. Runoff is now collected and pumped to the lead/asbestos treatment system, for metals precipitation and removal.

4.9.3 Potential SWMUs

The Bottom/Fly Ash Lagoon (RFA No. 16), an RFA recognized SWMU is located in this area. Three other potential SWMUs also are within the boundaries of Area 9. They include the former Bottom/Fly Ash Storage Facility/Hopper, the Former Bottom/Fly Ash Lagoon, and the Coal Pile Runoff Collection System. The locations of these units are presented on Figure 4-9.

Bottom/Fly Ash Storage Facility/Hopper (SWMU No. 9-1): This unit temporarily stores ash until it can be transported to the fly ash landfill for disposal. During loading transport vehicles small quantities of ash may be released onto the ground.

Former Bottom/Fly Ash Lagoon (SWMU No. 9-2): This unit had no release controls other than dikes of natural soil. No final conclusions can be made on release potential to groundwater since limited information is available. This unit exhibited moderate potential for release to surface water since it lies within the 100 year floodplain. This lagoon no longer accepts bottom/fly ash.

Bottom/Fly Ash Lagoon (SWMU No. 9-3): This unit is currently active and no closure date is set. The lagoon operates as a settling pond for fly ash slurry that is pumped in from the power plant station. This unit has no release controls other than dikes of natural soil. Flow from the lagoon is controlled under Outfall 004. No final conclusions can be made on release potential to groundwater

since limited information is available. This unit does exhibit moderate potential for release to surface water since it lies within the 100 year floodplain.

Coal Pile Runoff Collection System (SWMU No. 9-4): Runoff collected in this unit is treated at the lead/asbestos treatment system located in Area 8. This unit exhibits a low potential for release.

Based on the preceding information, all of these units will be included for investigation in the RFI Work Plan.

4.9.4 Areas of Concern (AOC)

There are no AOCs located in this area.

4.10 AREA 10: INORGANICS PROCESS AREA

Prior to 1942, most of this area was encompassed by a gravel pit mining operation. The gravel pit, which was approximately 50 to 60 feet deep, was filled with borrow material from an unknown source in the early fifties. When the barium production area was in operation, part of the pit area was re-excavated and used as an inorganics waste pond. This area also includes several storage tanks used in the $TiCl_4$ plant operation. The Inorganics Department Process Area, where sodium hydrosulfide (NaSH), sodium sulfide, and sodium tetrasulfide are produced, is also located in Area 10, adjacent to the Caustic Process Area and near the center of the Natrium facility.

4.10.1 Process History

4.10.1.1 Inorganics Processes

The inorganics process produces sodium sulfhydrate (NaSH) and sodium sulfide (Na_2S) from H_2S produced in the CS_2 process and caustic soda produced in the caustic process area. The H_2S is bubbled through the caustic soda solution in a process unit where the two raw materials react to form the NaSH product. Na_2S is produced by reacting NaSH with caustic. A portion of the products are shipped as liquid product and a portion is concentrated, solidified and stored in drums and containers for shipment offsite. Figure 4-24 presents a flow diagram for the inorganics production process.

The wastes produced by the NaSH process include a strong process wastewater with a high sulfide concentration which is sent to the calcium hypochlorite plant and a weak process wastewater with a lower sulfide concentration which is sent to the pH collection system.

4.10.1.2 Past Process - Barium Processes

In the past, PPG produced various barium products for offsite customers at its Natrium facility. These products were produced by roasting barium sulfate (contained in barium ore) with petroleum coke in a rotary kiln. The resulting barium sulfide was reacted with carbon dioxide to form barium carbonate or with HCl to form barium chloride which was then packaged and shipped offsite. Hydrogen sulfide was also produced by this process and this by-product was sent to the inorganics process for use as a raw material. Figure 4-25 presents a flow diagram of the barium production process.

The barium ore and petroleum coke arrived by barge and were stored in piles near the river. When the barium facility was closed and demolished, these materials were removed from the site.

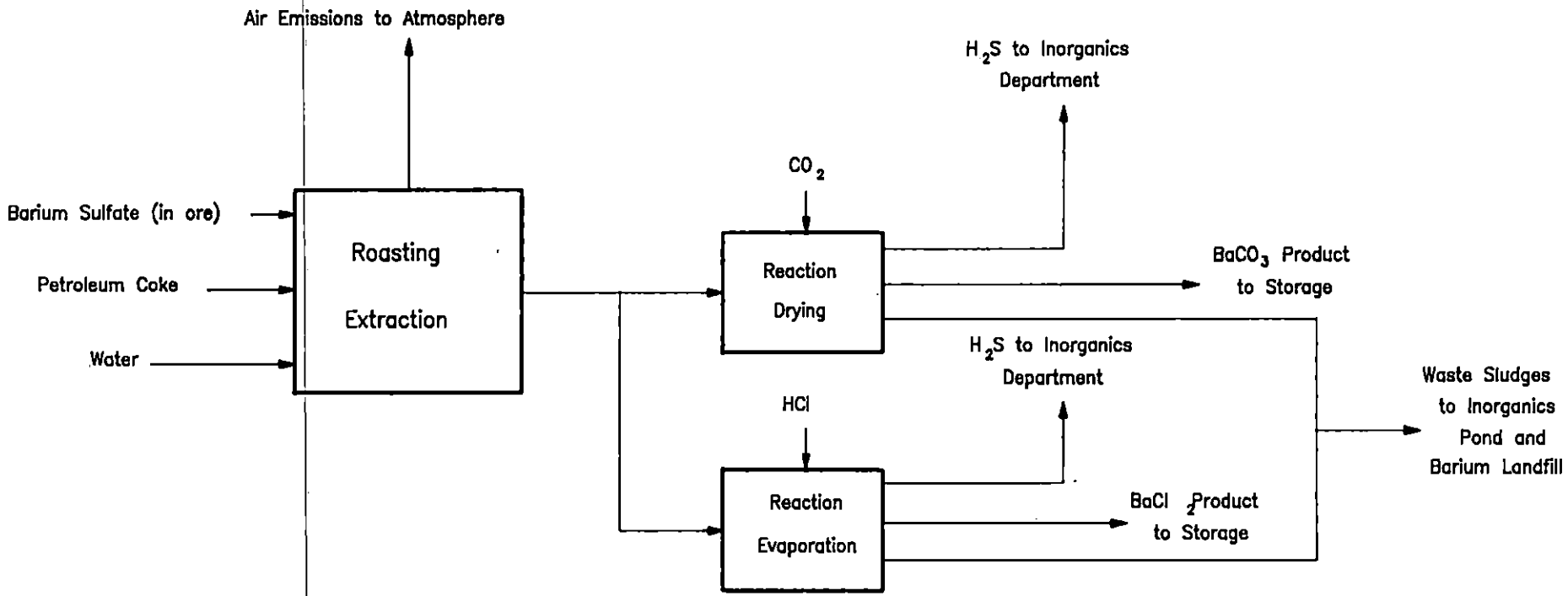


FIGURE 4-25

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 10 INORGANICS DEPARTMENT BARIUM PROCESSES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG-8

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

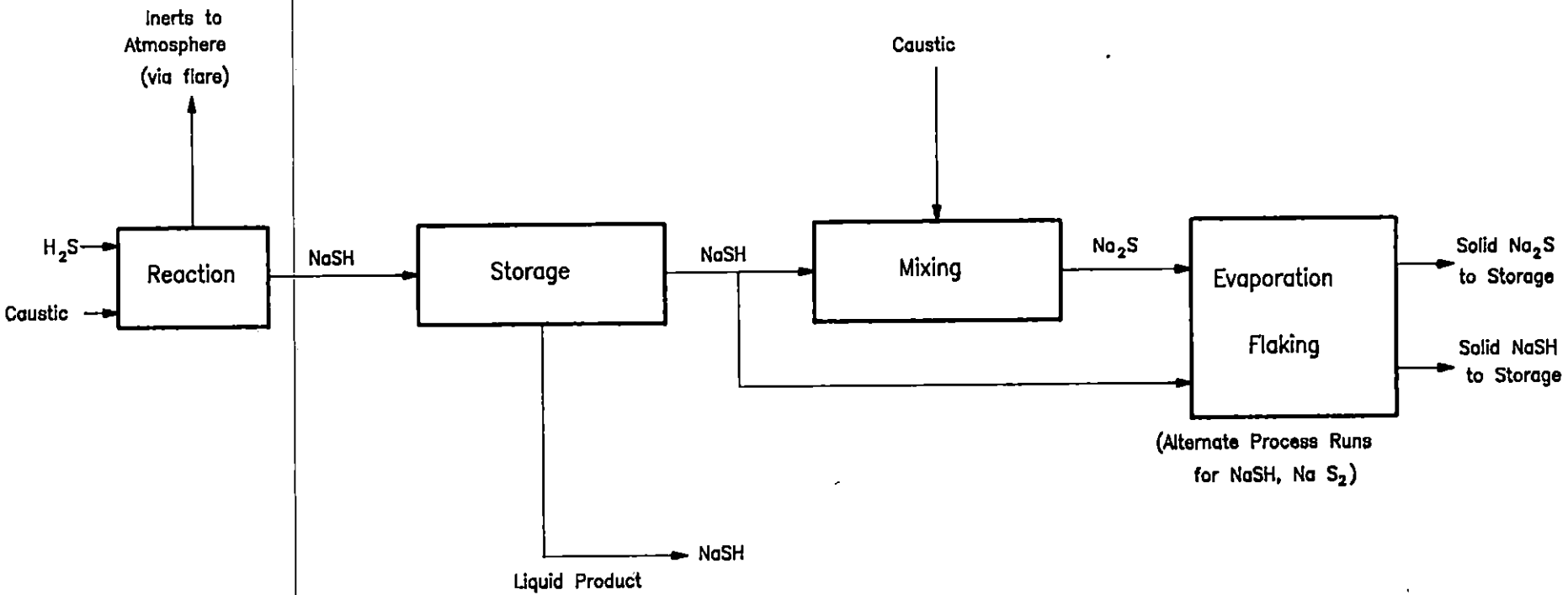


FIGURE 4–24

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 10 INORGANICS PROCESSES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG–7

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

The wastes produced in the barium process included waste gases with a high levels of carbon dioxide and sulfide compounds and various wastewaters, solids, and sludges with significant barium concentrations. The waste gases were vented to the atmosphere, while the solids and sludges were settled from the wastewater, with the wastewater discharged to the river. The barium solids and sludges were disposed of in an on-site waste pond. This waste pond was periodically cleaned, with the solids removed from the pond sent to the on-site flyash landfill cells J1 and J2 for disposal.

The barium process was located at the site of the present inorganics area. The barium process was discontinued in 1980. The Inorganics Waste Pond was also closed, and a soil cover was placed over it. However, barium has been detected in the soil and groundwater surrounding this area.

4.10.1.3 Past Process - Titanium Processes

The Natrium facility produced titanium dioxide from titanium ore using a chlorination process. The titanium ore was chlorinated to produce titanium tetrachloride which was then treated to produce high purity titanium dioxide.

The wastes produced by this process included titanium ore solids, process wastewaters, and sludges containing various titanium compounds. The process wastewaters were settled in a series of settling ponds to remove solids and sludges and the decanted water was then discharged to the Ohio River. The titanium solids were also placed in the titanium dioxide sludge ponds for disposal. Figure 4-26 presents the titanium dioxide wastewater settling process.

The titanium process was discontinued 1971. The settling ponds were covered with soil, while the buildings and process sewers were utilized in the current PELS® process. The titanium tetrachloride storage facility was subsequently converted to an oil storage facility which is still present at the Natrium facility.

4.10.2 Closure Activities

No closure activities have taken place in this area.

4.10.3 Potential SWMUs

The Inorganics Waste Pond (RFA No. 6) is located in this area. Two other potential SWMUs located in Area 10 are the Sewer System for the Barium and $TiCl_4$ Plant and the Process Sewers for the Inorganics Process Area. The locations of these units are presented in Figure 4-27.

Inorganics Waste Pond (SWMU No. 10-1): Prior to 1942, most of this Area 10 was encompassed by a gravel pit mining operation. The gravel pit which was approximately 50 to 60 feet deep was filled with borrow material from an unnamed source in the early fifties. Part of the pit area was re-excavated and used as the inorganics waste pond.

The remaining portion of Area 10 housed the $TiCl_4$ Plant and the Barium Plant. The $TiCl_4$ Plant built in 1954 was used in the TiO_2 process. The Barium Plant was built in 1952 and used barium sulfate ore brought in by barge to make barium bisulfide, barium carbonate, barium bichloride and several other barium products. Waste sludge from the barium oxide plant including barium carbonate, barium sulfate, iron oxide and silicon dioxide was placed in the inorganics waste pond from 1962 to 1972. The Inorganics Waste Pond served as a settling unit before the waste was sent to a NPDES permitted outfall. When the pond neared capacity, it would be dredged and the sludge would be placed in the fly ash landfill as discussed in the section entitled Area 4. The unit was closed in 1980, refilled to grade with clean soil and vegetated.

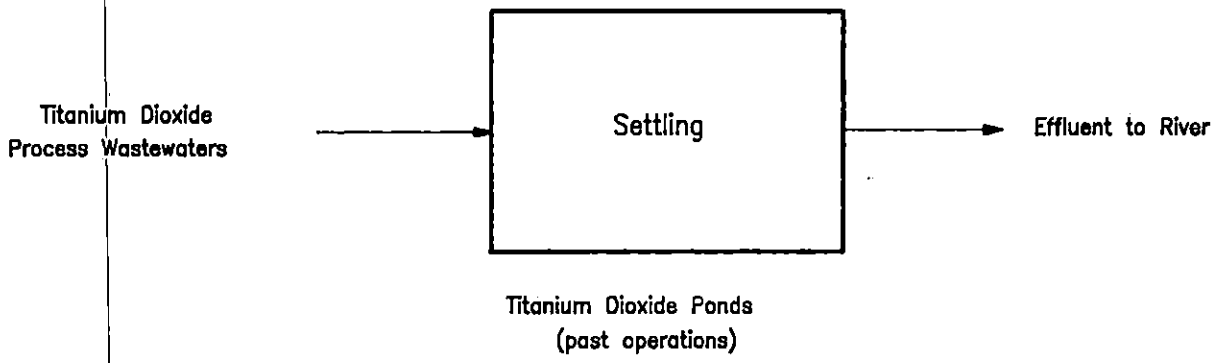


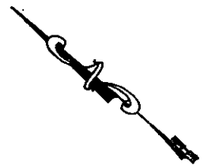
FIGURE 4-26

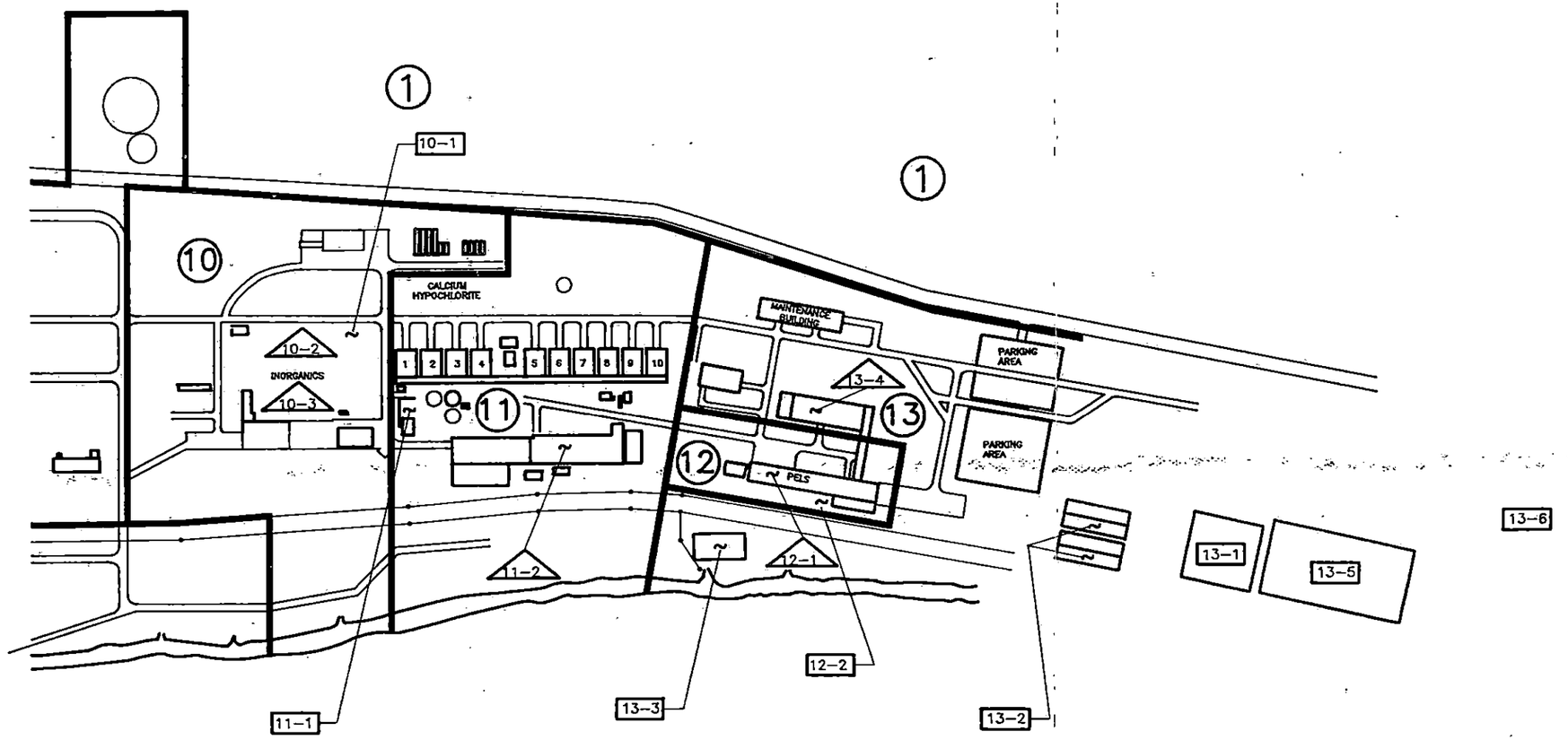
PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 10 TITANIUM PROCESSES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.:PPG-11

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

JOB NO.: 0516600100 PLOT SCALE: 1=400

STARTED ON: 9/18/92 REVISED: 9/30/92





SCALE

0 200 400

1"=400'

LEGEND:

DENOTES BOUNDARY LOCATIONS FOR GEOGRAPHIC AREAS.

- 10-1 INORGANICS WASTE POND
- 10-2 SEWER SYSTEM FOR FORMER BARIUM AND $TiCl_4$ PLANTS
- 10-3 PROCESS SEWERS FOR INORGANICS AREA
- 11-1 CAL-HYPO REAGENT PREP AREA
- 11-2 PROCESS SEWER FOR CAL-HYPO
- 12-1 PELS AREA PROCESS SEWER
- 12-2 PELS BULK LOADING AREA
- 13-1 BARIUM LANDFILL (APPROXIMATE LOCATION)
- 13-2 TiO_2 PONDS (APPROXIMATE LOCATION)
- 13-3 BHC STORAGE PILE LOCATION
- 13-4 SEWERS INSIDE AND SURROUNDING PAINT SHOP AREA
- 13-5 CAL-HYPO LANDFILL (APPROXIMATE LOCATION)
- 13-6 OIL STORAGE TANK AREA

NOTE:

ALL SEWER SYSTEMS ARE DESIGNATED WITH A △ TO SHOW A GENERALIZED LOCATION WITHIN THE APPROPRIATE AREA.

FIGURE 4-27

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	SWMUs LOCATED IN AREAS 10,11,12,AND 13	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/18/92	DR.: R.C. LIPP
	SCALE: 1"=400'	DWG. NO. 05166-B3

The monitoring wells near this unit exhibit elevated inorganic constituent levels. It is possible that this unit contributed to groundwater degradation during it's operation and continues since the unit was closed.

Sewer System for the Barium and Old Titanium Tetrachloride Plant (SWMU No. 10-2): These systems accepted wastewater generated during production in this process area. The only potential for release from these units is through leaks or releases. However, there is no documented evidence stating that these units have leaked or released any contaminants into the environment.

The Process Sewers for the Inorganics Process Area (SWMU No. 10-3): This systems accepted wastewater containing inorganic constituents generated during production in this process areas. The only potential for release from this unit is through leaks or releases. However, there is no documented evidence stating that this unit has leaked or released any contaminants into the environment.

4.10.4 Areas of Concern (AOC)

The soil in the entire area (AOC No. 10-1A) and ten tanks which formerly stored $TiCl_4$ (AOC No. 10-2A) are subject to investigation. These storage tanks may contain residue of unknown materials. There is no evidence of tank leakage during the tanks' usage for $TiCl_4$ storage. The location of these tanks is shown on Figure 4-28.

Based on the preceding information, all of these units and areas will be included for investigation in the RFI Work Plan.

4.11 AREA 11: CALCIUM HYPOCHLORITE PROCESS AREA

The main component of this area is the Calcium Hypochlorite (Cal-Hypo) Process Area. The Cal-Hypo production area was built in 1984 and resides on a portion of the site of the former $TiCl_4$ plant. The Cal-Hypo area also is adjacent to the former locations of the Barium and TiO_2 plants.

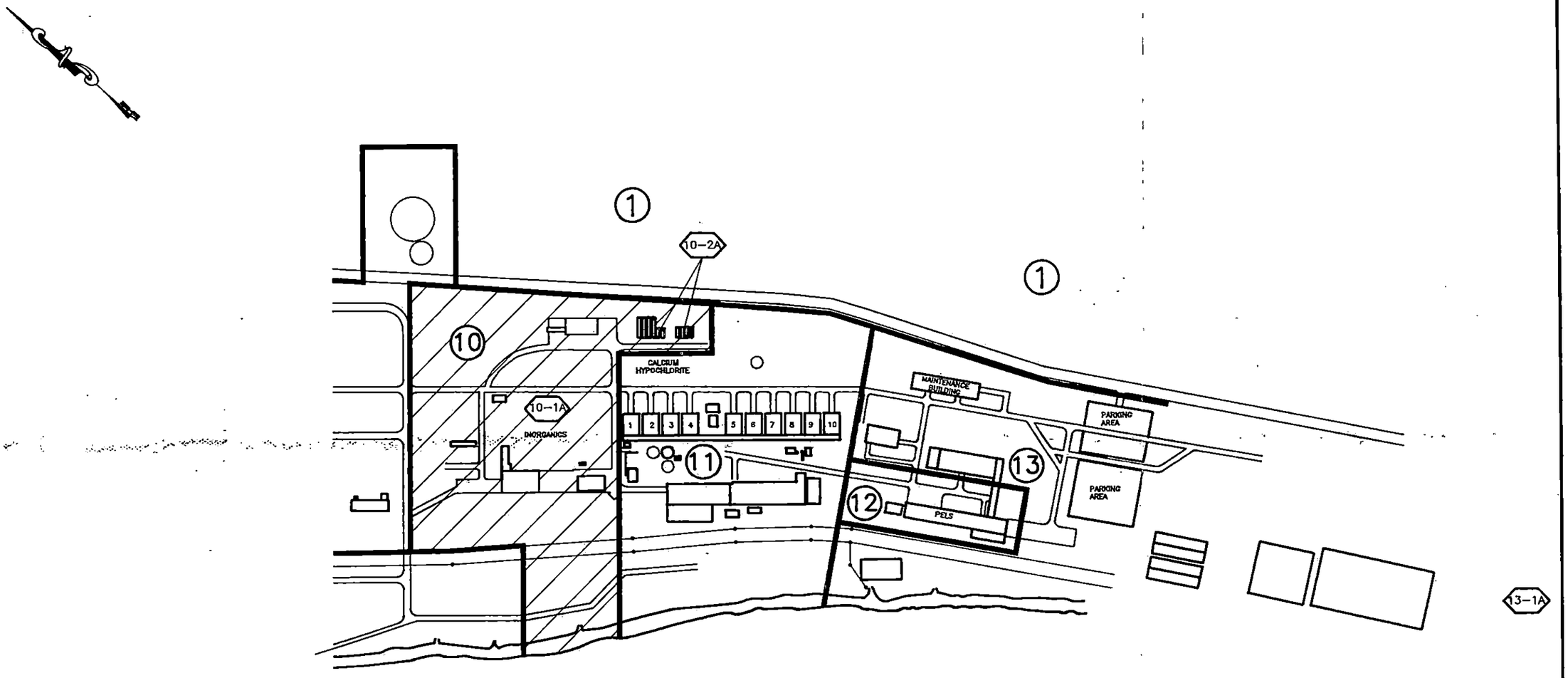
4.11.1 Process History

The Cal-Hypo process area at the Natrium facility produces calcium hypochlorite from chlorine produced in the chlorine process, caustic soda produced in the caustic process area, and hydrated lime from offsite. The lime is wetted, mixed with caustic, and chlorinated to produce calcium hypochlorite. The waste salts in the product stream are separated and removed, and the Cal-Hypo stream is concentrated, dried, and packaged and stored as a solid product in drums and containers. The waste gases from the process are passed through a baghouse and a caustic scrubber to remove chlorine and Cal-Hypo dust and is then vented to the atmosphere. Figure 4-29 presents a flow diagram of the Cal-Hypo process.

The wastes produced in the Cal-Hypo process include process wastewaters, crystallized salt solutions, stormwater runoff, cleaning wastewaters, and purge from the chlorine waste gas scrubber. These wastes are sent to the Cal-Hypo waste collection system where they are reacted with the strong wastewater stream from the inorganics department to remove contaminants. The contaminant salts, mostly calcium carbonate and sulfate and elemental sulfur are precipitated, filtered, and collected in bins, and the wastewater effluent from this treatment undergoes pH adjustment and is then discharged to the Ohio River via a permitted outfall. The solids and sludges produced by the waste treatment process are landfilled in a permitted, non-hazardous waste landfill at the Natrium facility.

JOB NO.: 0516600100 PLOT SCALE: 1=400

STARTED ON: 9/18/92 REVISED: 9/30/92



LEGEND

AOCs

- 10-1A — SOIL-IN-THE-INORGANICS-AREA
- 10-2A — OLD $TiCl_4$ STORAGE TANKS
- 13-1A — DRIP GAS DRUM STORAGE

DENOTES BOUNDARY LOCATIONS FOR GEOGRAPHIC AREAS.

SCALE

0 200 400

1"=400'

FIGURE 4-28

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AOCs LOCATED IN AREAS 10,11,12 AND 13	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/18/92	DR.: R.C. LIPP
	SCALE: 1"=400'	DWG. NO. 05166-B3A

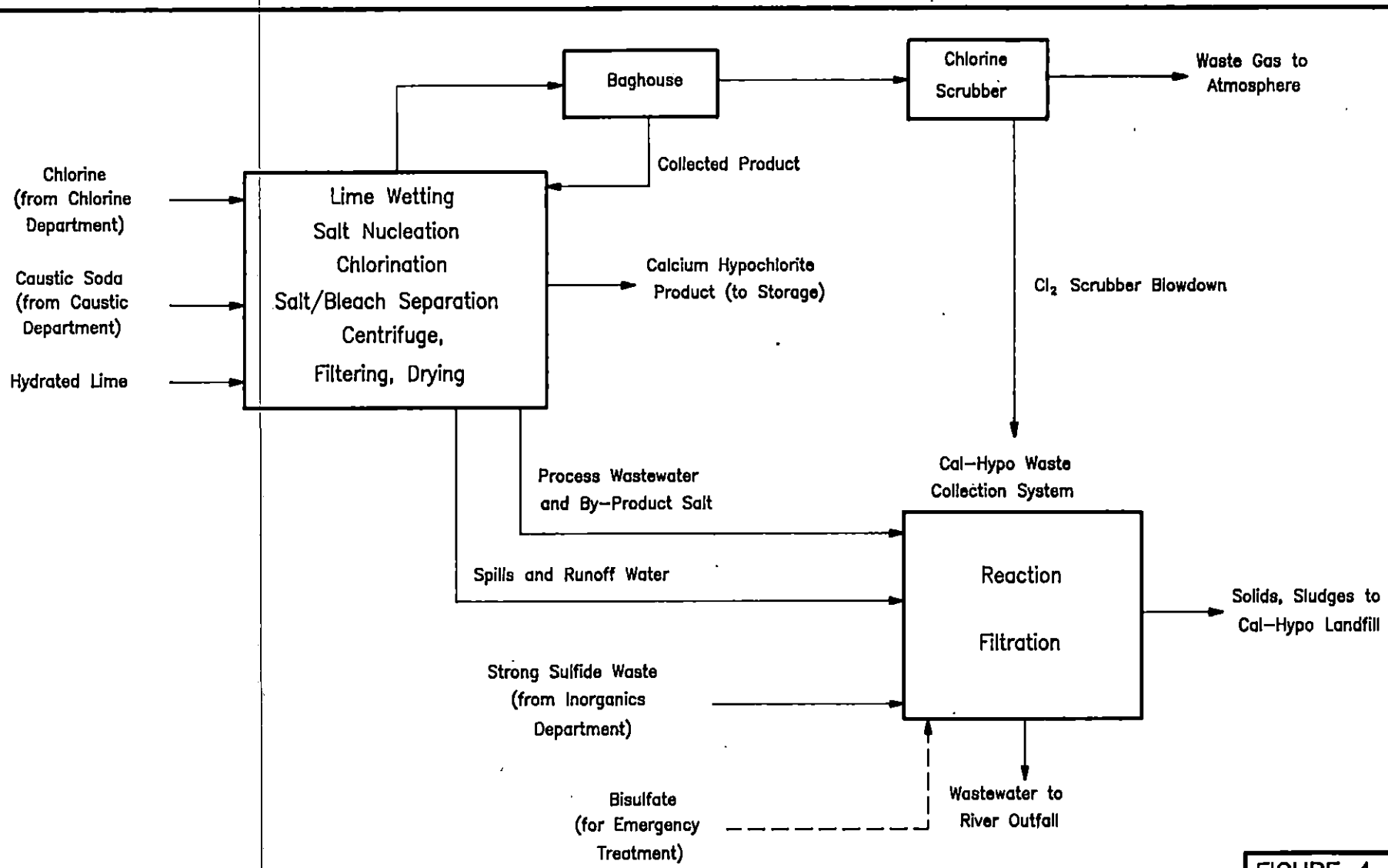


FIGURE 4-29

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 11 CAL-HYPO PROCESSES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.: PPG-9

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

4.11.2 Closure Activities

No closure activities have taken place in this area.

4.11.3 Potential SWMUs

The Cal-Hypo Reagent Prep Area and the Process Sewer for Cal-Hypo are the potential SWMUs associated with this area. The locations of these units are presented on Figure 4-27.

Cal-Hypo Reagent Prep Area (SWMU 11-1): The filter press waste stored in this area is placed in bins or dumpsters until it can be transported to the Cal-Hypo landfill. Occasionally, these bins may overflow. However, the potential for release is low because the area is contained with concrete.

Process Sewer for Cal-Hypo (SWMU No. 11-2): The wastewater collected in the sewers located in this process area are piped through above ground pipes to the Reagent Prep area. The potential for release is low because if a leak were to occur it would quickly be detected and repaired.

Based on the preceding information, the reagent prep area will be included for investigation in the RFI Work Plan.

4.11.4 Areas of Concern (AOC)

No AOCs exist in this area.

4.12 AREA 12: PELS® PROCESS AREA

The PELS® production area, constructed in 1975, produces anhydrous sodium hydroxide beads from high purity caustic. A bulk loading area for PELS® product is located near the production facility and is also included in Area 13.

4.12.1 Process History

The PELS® process produces solid sodium hydroxide pellets (PELS®) from the high purity DH50 caustic product produced in the caustic department. The caustic is dried to evaporate the water present in the solution, and the solid sodium hydroxide is pelletized, containerized, and stored for shipment offsite. Figure 4-30 presents a flow diagram for the PELS® process area.

The wastes produced in the PELS® process include water vapor in heated air, cleaning wastewaters, and product spills. The heated air and water vapor are exhausted to the atmosphere while the cleaning wastewater and product spills (after dilution) are sent to the caustic process raw material stream.

4.12.2 Closure Activities

The PELS® tank car and truck loading areas were upgraded in 1980. Sumps and collection systems were installed to collect spills and leaks and pump them back to the caustic department.

4.12.3 Potential SWMUs

The potential SWMUs located in this area include the PELS® Area Process Sewer and the PELS® Product Loading Area. The locations of these units are presented on Figure 4-27.

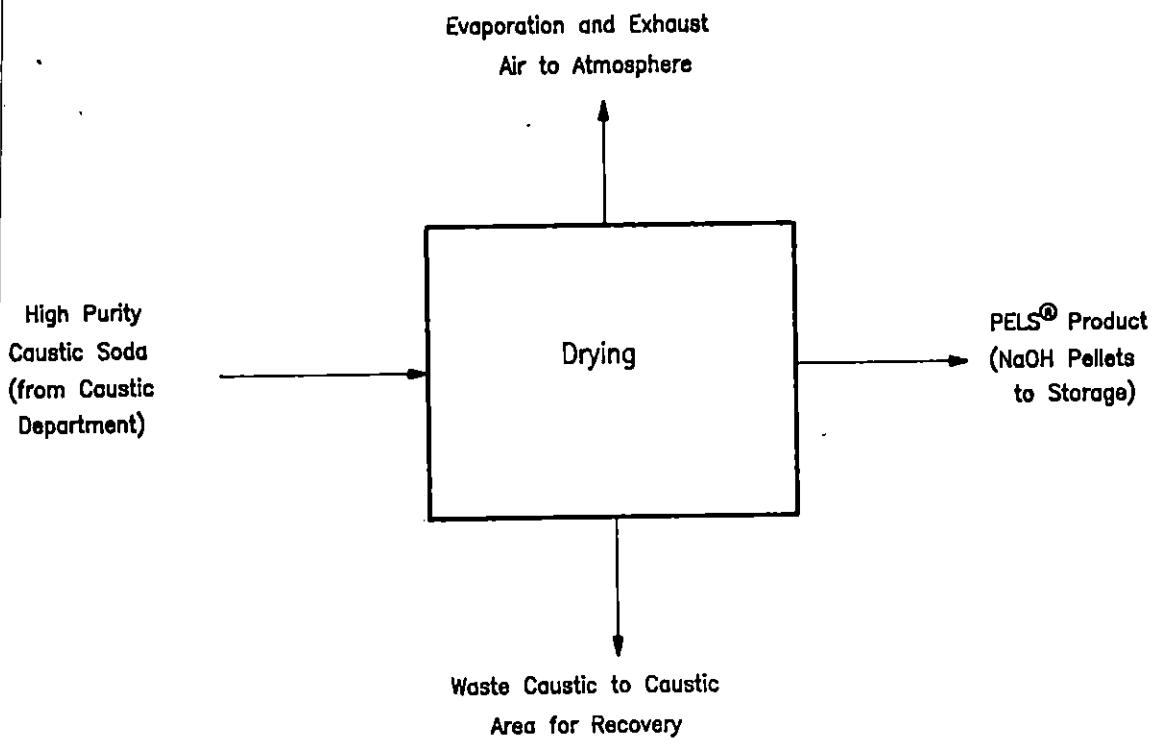


FIGURE 4-30

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 12 PELS® PROCESS	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92	DR.: B. SNYDER
	SCALE: N.T.S.	DWG. NO.:PPG-10

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

PELS® Area Process Sewer (SWMU No. 12-1): The PELS® sump collection system was installed two years ago. Before this time the old TiO_2 sump system collected wastewater generated from the PELS® process. Eventually all liquids entering this sump system are pumped back to the caustic department for recovery. This systems accepts wastewater, containing anhydrous sodium hydroxide beads, generated during production in this process areas. The cooling water used in this process is pH adjusted due to the presence of caustic and sent to Outfall 012.

This sump system was renovated in 1990. The only potential for release from this unit is through leaks or releases. No information is available pertaining to potential leakage.

PELS® Bulk Product Loading Area (SWMU No. 12-2): This area contains a sump collection system which collects any spill generated during product loading. However, the product is a solid, and there is minimal threat of release which cannot be contained and collected. This system was installed around 1980 and prior to installation of this system releases were uncontained.

Based on the preceding information, all of these units will be included for investigation in the RFI Work Plan.

4.12.4 Areas of Concern (AOC)

No AOCs exist in this area.

4.13 AREA 13: SOUTHERN END OF PLANT

This area occupies the southern portion of the Natrium plant. No process areas are located within this area; however, several waste disposal units exist in the area. These units include the Barium landfill, the TiO_2 Ponds, the Cal-Hypo landfill, and the former location of the Benzene Hexachloride (BHC) Waste Pile. The No. 2 brine field and a paint shop, including satellite waste paint storage are also located in this area.

4.13.1 Process History

This area has not been used for process purposes.

4.13.2 Closure Activities

The Cal-Hypo Landfill has a closure plan which will be implemented when operations cease. Currently, PPG is planning to install a synthetic liner under the portion of the landfill which has not yet been filled.

4.13.3 Potential SWMUs

Four previously identified SWMUs are located with this area. They include the Barium Landfill (RFA No. 7), the TiO_2 Ponds (RFA No. 12), the BHC Waste Storage Pile Location (RFA No. 8) and the Cal-Hypo Landfill (RFA No. 9). Two other potential SWMUs, the Sewers Inside and Surrounding the Paint Shop Area and the Oil Storage Tank Area (for No. 2 Brine Field development), are also located in this section. The locations of these units are presented in Figure 4-27.

Barium Landfill (SWMU No. 13-1): This landfill was used during 1963 for the disposal of solid wastes generated during the operation of the barium carbonate/chloride plant. The waste constituents entering the landfill directly parallel wastes disposed in the inorganics waste pond. These

wastes included approximately 20,000,000 pounds of barium carbonate, barium sulfate, iron oxide and silicon dioxide. The site was closed in June 1980 and covered with soil and seeded. The landfill currently exists as an area with vegetation located near the old TiO_2 ponds.

The pumping wells in the vicinity of this unit exhibit detectable levels of inorganic constituents. The waste was not removed from this unit prior to closure; therefore, it is possible that this unit contributes to groundwater contamination.

TiO_2 Ponds (SWMU No. 13-2): The TiO_2 Ponds were a series of settling ponds for TiO_2 pigment waste generated in the TiO_2 plant. The ponds are currently recognized as a SWMU in the RFA. The ponds were used from 1968 through 1971 and were closed in 1980. Although residual TiO_2 is extremely inert and would not be expected to leach, a cap consisting of at least 6 inches of compacted clay and a vegetative cover was installed to insure leaching does not occur. The land in the immediate vicinity of the unit is not currently used.

No specific monitoring of this unit has been done.

The BHC Waste Storage Pile Location (SWMU No. 13-3): This storage unit was constructed as an open pile earthen berm storage unit with a capacity of 1,900 cubic yards to receive wastes from the BHC plant which is no longer in use. This waste pile stored approximately 330,000 pounds of benzene hexachloride isomers (alpha, beta, gamma BHC), chlorinated organic solvents (trace) and other waste products generated during the production of high gamma BHC (15% and 40% concentrations) from 1952 to 1962. Removal of solid waste and contaminated soil from this area occurred in 1977. The waste was sent to an approved landfill. No formal closure of the site has occurred. This unit has documented evidence of releases to groundwater and surface water during its operation. The present release potential to groundwater is unclear since the pile and contaminated soil were removed in 1977.

Sewers Inside and Surrounding the Paint Shop Area (SWMU No. 13-4): Paint spills and wash water may potentially discharge into this unit. This system discharges to NPDES Outfall 012.

The Cal-Hypo Landfill (SWMU No. 13-5): The waste in this landfill is a non-hazardous filter cake material. This waste type easily decomposes into water and salt. This unit lies in the 100 year floodplain but the dike crest is above the 100 year flood elevation.

Oil Storage Tank Area (SWMU No. 13-6): The oil stored in these tanks was previously used during development activities in the No. 2 Brine Field. The former storage tanks held brine well development oil. The potential of periodic spillage existed in the area surrounding the tank; however, no evidence of spills or leaks is documented.

Based on the preceding information, all of these units, except the Cal-Hypo landfill, will be included for investigation in the RFI Work Plan.

4.13.4 Areas of Concern (AOC)

The drip gas drum storage (near #8 brine well) (AOC No. 13-1A) requires further investigation to determine the impact on the surrounding area. The location of this AOC is presented on Figure 4-28.

4.14 AREA 14: CARBON BISULFIDE PROCESS AREA

This area contains the Carbon Bisulfide (CS_2) production unit and a RCRA hazardous waste container storage unit associated with this process. The carbon bisulfide plant located north of the chlorine production area was added to the Natrium facility in 1964.

Contaminated oil collected in the process is placed into drums which are stored in the RCRA drum storage area located adjacent to the CS_2 plant. The boundaries of Area 15 lie at the limits of the CS_2 area and the RCRA drum storage area. The CS_2 shipping and tank car facilities are located in Area 15.

4.14.1 Process History

The carbon bisulfide processes at the Natrium facility produce CS_2 and H_2S by reacting molten, elemental sulfur and natural gas in the presence of a catalyst. Gaseous CS_2 produced by this reaction is absorbed in an oil absorption and stripping system and is then recovered as a liquid product by condensation and distillation. The CS_2 is stored in tanks blanketed with water until shipment offsite occurs. (The water blanket prevents evaporation and ignition of CS_2 vapors in the storage tanks.) Hydrogen sulfide gas produced by the CS_2 process is either sent to the inorganics department for use as a raw material or is sent to the Claus sulfur recovery unit, located in the CS_2 process area, where it is converted into elemental sulfur for reuse as a raw material in the CS_2 process. During emergency conditions, the H_2S gas may also be burned in an emergency flare, with the emissions vented to the atmosphere. Figure 4-31 presents a flow diagram for the CS_2 production processes.

The wastes produced by this process include waste gases from the Claus unit, process wastewaters, cleaning wastewaters, and product spills. The process wastewaters and cleaning wastewaters are treated in an oil skimming unit prior to discharge to the Ohio River via a permitted outfall. The oil removed by this treatment process, which is an ignitable waste classified as RCRA waste code D001, is collected in drums and stored in a RCRA permitted drum storage (located adjacent to the CS_2 process area) for later disposal at an offsite, RCRA permitted facility.

Because of the extremely volatile and flammable nature of CS_2, extreme care is taken to avoid product spills. However, spills have occurred in the past and CS_2 contamination has been found in samples of soil collected in the CS_2 process area.

4.14.2 Closure Activities

The RCRA CS_2 D001 Drum Storage Unit was constructed to prevent release of chemicals to the environment. A closure plan has already been prepared for this unit, and will be implemented when the unit ceases operation.

4.14.3 Potential SWMUs

A RCRA CS_2 D001 Drum Storage Unit (RFA No. 2) which was previously identified as a SWMU in the RFA, is located in this area. One potential SWMU, the CS_2 Process Sewers, is also located in Area 15. The locations of these units are presented in Figure 4-2.

RCRA CS_2 D001 Drum Storage Unit (SWMU No. 14-1): This unit began operation in June 1982. Hazardous wastes are stored in 55-gallon, phenolic-lined DOT-17C drums at this container storage site. The only waste stored at this facility is a CS_2 waste oil mixture from the production of carbon bisulfide. This container storage site has a 6-inch concrete base and a steel roof. All drums are stored on pallets to prevent contact with standing liquids. Vehicles are loaded directly at the storage

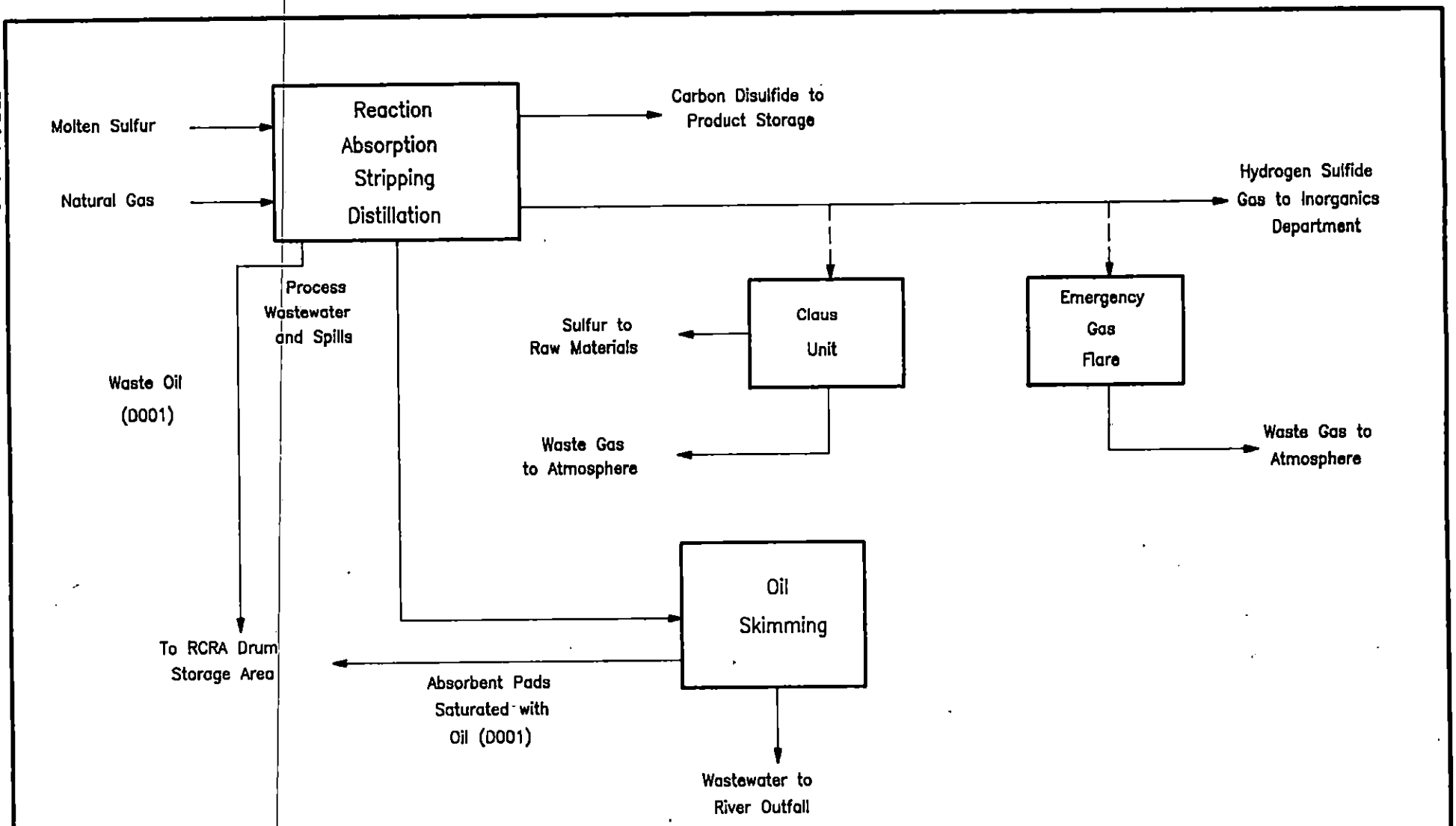


FIGURE 4-31

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	AREA 14 CS_2 PROCESSES
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 10/1/92 | DR.: B. SNYDER SCALE: N.T.S. | DWG. NO.:PPG-14

JOB NO.: 0516600100 PLOT SCALE: 1=140
STARTED ON: 10/1/92 REVISED: 0/00/00

spot. No direct connection exists between the dike drain and the plant's sewer system. Any spills or releases would be contained within the unit.

CS_2 Area Process Sewers (SWMU No. 14-2): This sewer system is entirely contained with concrete trenches. All wastewater goes through an internal oil/water underflow weir before discharge through Outfall 009. There is not enough information available to determine the release potential of this unit.

Based on the preceding information the process sewers will be included for investigation in the RFI Work Plan.

4.14.4 Areas of Concern (AOC)

Some releases of CS_2 have been documented in this process area (AOC 14-1A) over its operation. This area requires further investigation. A CS_2 tank car product loading area (AOC No. 14-2A) also warrants further investigation. The location of these AOCs are shown in Figure 4-4.

5.0 DESCRIPTION OF SOURCE EVALUATION PROTOCOLS

Potential SWMUs and AOCs were identified through a variety of efforts. An extensive records search along with a review of past and present practices was undertaken to compile essential information on suspected soil and groundwater contamination sources.

5.1 PROCESS REVIEWS

A review of past and present processes was conducted in order to define both waste and product streams. This review included detailed interviews with process engineers to help identify all units containing waste during past and present practices. This information provided the basis for determination of whether an operation, vessel, etc., is a SWMU or an AOC.

5.2 SITE VISITS

Site visits were made to review past and present waste management practices and to gain a thorough understanding of the processes performed at the facility. These visits included a tour of all Natrium processes. Facility personnel who have knowledge of particular processes conducted these tours. Furthermore, available historical aerial photographs were examined for evidence of releases. Additionally, personnel interviews were used to obtain information on both past and present facility practices.

5.3 FILE SEARCH

A file search was conducted to collect information on the types of chemicals used and the management techniques employed at the Natrium facility. A review of relevant past environmental reports and permits was conducted to help compile a complete listing of potential contamination.

5.4 CONTAMINANT MIGRATION AND POTENTIAL RECEPTORS

As a result of the review of existing site information, environmental setting and plant operations, a preliminary listing of migration pathways and potential receptors was prepared. This information will be factored into the RFI Work Plan as part of scoping the necessary investigation, sampling and data collection. In addition, the Pre-Investigation Evaluation of Corrective Measures Technologies, submitted under separate cover, incorporated these pathways and receptors into the evaluation of possible remedies.

The migration pathways which are considered significant and possible from SWMUs and AOCs at the site are:

- Migration of chemicals through unsaturated soils from the point of release to other soils or to interfaces with other media of concern (groundwater or surface water).
- Migration of chemicals through groundwater, both vertically and horizontally (existing pumping of the water table aquifer currently precludes migration outside the production well cones of depression).
- Direct contact with chemicals by plant operators or remediation workers working with soils at or near the units.

Air emissions from the plant, either directly from plant operations (which are fully permitted) or indirectly from SWMUs or AOCs are not considered significant and will not be included in the RFI Work Plan other than health and safety monitoring.

Potential receptors which are considered significant include the following (along with migration route):

- Plant workers (soil or groundwater)
- Remediation workers (soil or groundwater)
- Subsequent property owners (soil or groundwater)
- Offsite groundwater users (groundwater)

6.0 CONCLUSIONS

The review of current plant operations and historical activities of others and PPG resulted in identification of 61 Solid Waste Management Units and 19 Areas of Concern. These units were evaluated to determine the potential for past or current release(s) and therefore the need for further inclusion in the RFI process.

Table 6-1 shows those units which are recommended for further investigation during the RFI. These units meet the regulatory definition of SWMUs or AOCs and represent a possible source of chemical release to the environment. All AOCs are included on this list.

Table 6-2 shows the units which have met the definition of SWMU, but are not recommended for inclusion in the RFI. The reason for exclusion is either because the unit is already covered under other permits or do not show any evidence of release from the unit to the environment.

Several units are covered by other permits. Each of the permits which covers operations with hazardous chemicals has provisions to require closure or corrective action if warranted. It would be redundant to require investigation during the RFI. Each permitted unit currently operates within its permit conditions and there is no evidence of releases which would currently require corrective measures or permit revision.

Other units are excluded from the RFI because their operation, construction or prior closure activities preclude(d) releases of chemicals to the environment.

The following justification is provided for the 16 SWMUs not recommended for the RFI:

5-1 RCRA Hazardous Waste Drum Storage Area (Marshall Plant): SWMU is a fully permitted RCRA storage area constructed and operated to prevent releases of chemicals from the unit. This unit was built in 1982 and there was no storage or other waste management operation at the location prior to its operation. There is no knowledge or evidence of release. The closure of the unit will be covered under PPG's RCRA permit.

5-2 Used Oil Storage Tank: SWMU is used for storage of used lubricating oil. This tank was recently removed and there was no evidence of release. This area has a clay base and diked containment.

5-3 Used Oil Drum Storage: SWMU is used for storage of used lubrication oil in drums. The unit is contained, with a concrete base and a surrounding berm. There is no knowledge or evidence of release from this unit.

5-4 Used Drum Storage Area: SWMU is used for storage of empty drums from a variety of sources within the plant. All drums are cleaned to acceptable standards prior to storage at this location.

5-7 Dumpster Trash Compactor Facility: This SWMU is used to compact non-hazardous wastes generated at the plant and placed into dumpsters throughout he plant. Since the initiation of RCRA, PPG policy has prohibited the placement of hazardous waste into dumpsters. This SWMU has only been in place since the closure of the landfill.

6-2 Less Than 90 Day Accumulation Area: SWMU is a RCRA monitored unit for accumulated wastes which PPG is not permitted to store in RCRA drum storage facilities. The area is contained and there is no knowledge or evidence of uncontrolled spills.

8-1 D009 Satellite Accumulation Area: SWMU is a RCRA monitored unit for accumulated wastes generated in the chlorine area. Wastes are only stored here for 90 days. The area is contained and there is no knowledge or evidence of uncontrolled spills.

8-2 Area of K073 Waste Tank Car: SWMU was closed under RCRA in September, 1984. The tank car was removed and there was never evidence of leakage or release. The closure of this SWMU was approved by USEPA and the RFA recommended no further action.

8-3 Tracifier Treatment System (Removed): SWMU was removed in 1984 when the new plant technology eliminated the need for it. At the time of removal, there was no evidence of release from the unit.

8-7 pH Collection System: SWMU is a tank where treatment systems are discharged. Chemicals of concern are removed in the various treatment systems prior to discharge to the tank. Only pH adjustment occurs, prior to discharge to NPDES outfall.

8-10 Former Site of Circuits 1-4: SWMU was the former location of chlorine circuits 1-4, and a small portion of the circuit was used for rehabilitation of diaphragms; including recovery of lead. These circuits were demolished in 1985 and soil testing was performed. Sample results showed lead levels in concrete below 1.9 mg/l (.0018 mg/l mercury) and in soil <0.005 mg/l (.0075 mg/l mercury). A total of 25 concrete samples and two soil samples were collected and analyzed.

8-11 Mercury Surface Impoundment: SWMU was removed and closed under RCRA in October-November, 1988. The contents and liner were removed and soil tests done to confirm that no leakage had occurred. The closure of the SWMU was approved by USEPA.

8-13 Mercury Butter Still: SWMU is located on the second floor of the chlorine circuit #7. It is a large tank used to remove elemental mercury within the mercury chlorine process. It is contained and bermed and there is no evidence or knowledge of leakage from the unit.

11-2 Process Sewer for Cal-Hypo: SWMU is used to transfer wastewater from the Cal-Hypo process. The sewer is above ground, installed in 1984 and is regularly checked for leakage. There is no evidence or knowledge of release from this unit.

13-5 Cal-Hypo Landfill: SWMU is permitted by the State of West Virginia and handles non-hazardous calcium hypochlorite filter cake. This unit was recommended for no further action in the RFA.

14-1 RCRA CS_2 D001 Drum Storage Area: SWMU is a fully permitted RCRA storage area constructed and operated to prevent releases of chemicals from the unit. This unit was built in 1983 and their was no waste storage or management prior to its construction. There is no knowledge or evidence of release. The closure of the unit will be covered under PPG's RCRA permit.

TABLE 6-1

SWMUs/AOCs RECOMMENDED FOR INCLUSION INTO THE RFI

Unit or Area	SWMU Number	AOC Number
Area 1: Green Area		
None		
Area 2: Bottom/Fly Ash Disposal Area		
■ Bottom/Fly Ash Landfill Units J-3, J-4 and J-5	2-1	
■ Oil Storage Tank (for #3 Brine Field Development)	2-2	
Area 3: Ammonia Process Area		
■ Oil Water Separator Area	3-1	
■ Vehicle Repair Facility	3-2	
■ Storm Sewer, Trenches and Drains	3-3	
■ Acid Storage Tank (AOC)		3-1A
Area 4: Marshall Plant Waste Area		
■ Bottom/Fly Ash Landfill Unit J-1 and J-2	4-1	
■ Marshall Plant Waste Pond	4-2	
Area 5: Old Marshall Plant Product Area		
■ Process and Sanitary Sewers	5-5	
■ Sanitary Landfill	5-6	
■ Soil Throughout Area (AOC)		5-1A
■ Fuel Oil Storage Area		5-2A
■ Gasoline Storage Facility		5-3A
Area 6: MCB Production Area		
■ KO85 Sludge Accumulation Area	6-1	
■ Organics Treatment System	6-3	
■ MCB Process Sewers	6-4	
■ MCB Product Tank Car Loading Area	6-5	
■ Cleanout Area for Process Equipment	6-6	
■ Former Location of BHC Pile	6-7	
■ Intermediate and Product Storage Containment Area and Sump (AOC)		
■ Soil Beneath CS_2 Tank (AOC)		6-1A
■ Soil in Entire Area is Suspect (AOC)		6-2A
		6-3A
Area 7: Research and Development Area Near Laboratory		
■ Laboratory Sewer System	7-1	
■ R&D Area Northeast of Lab (AOC)		7-1A

TABLE 6-1 (Continued)
SWMUs/AOCs RECOMMENDED FOR INCLUSION INTO THE RFI

Unit or Area	SWMU Number	AOC Number
Area 8: Chlorine and Caustic Process Area		
■ Chlorine Cooling/Drying System	8-4	
■ Lead/Asbestos Treatment System(s)	8-5	
■ Oil Storage Tank (for #1 Brine Field Development)	8-6	
■ Non-Mercury Process Sewer	8-8	
■ Brine Treatment System	8-9	
■ Mercury Brine Treatment System	8-12	
■ Mercury Treatment System (including Carbon Absorption Beds)	8-14	
■ Mercury Process Sewer	8-15	
■ Ditch Below Mercury Treatment System	8-16	
■ #7 Circuit Hydrogen Gas Purifying System	8-17	
■ Mercury Wastewater Collection Tanks	8-18	
■ Weak Caustic Waste Storage Tanks	8-19	
■ Process Sewers in Caustic Area	8-20	
■ Former BHC Production Area (AOC)		8-1A
■ Gasoline Storage Facility		8-2A
■ Caustic Loading Area (AOC)		8-3A
■ Graphite Cell Construction Area (AOC)		8-4A
■ Chlorine Area (Former) Once Through Sewer		8-5A
■ All Caustic Storage Tanks (AOC)		8-6A
Area 9: Power Plant Area		
■ Storage Facility/Hopper	9-1	
■ Former Bottom/Fly Ash Lagoon (South of Powerhouse)	9-2	
■ Bottom/Fly Ash Lagoon	9-3	
■ Coal Pile Runoff System	9-4	
Area 10: Inorganics Process Area		
■ Inorganics Waste Pond	10-1	
■ Sewer System for Barium and $TiCl_4$ Plant	10-2	
■ Process Sewers for the Inorganics Area	10-3	
■ Soil in Inorganics Area (AOC)		10-1A
■ Old $TiCl_4$ Storage Tanks (AOC)		10-2A
Area 11: Calcium Hypochlorite Process Area		
■ Cal-Hypo Reagent Prep Area	11-1	
Area 12: PELS® Process Area		
■ PELS® Area Process Sewer	12-1	
■ PELS® Bulk Loading Area	12-2	

TABLE 6-1 (Continued)
SWMUs/AOCs RECOMMENDED FOR INCLUSION INTO THE RFI

Unit or Area	SWMU Number	AOC Number
Area 13: Southern End of Plant		
■ Barium Landfill	13-1	
■ TiO_2 Pond	13-2	
■ BHC Storage Pile Location	13-3	
■ Sewers Inside and Surrounding Paint Shop Area	13-4	
■ Oil Storage Tank Car (for #2 Brine Field Development)	13-6	
■ Drip Gas Drum Storage, (near #8 Brine Well) (AOC)		13-1A
Area 14: Carbon Bisulfide Process Area		
■ CS_2 Area Process Sewers	14-2	
■ Soil in Process Area (AOC)		14-1A
■ Tank Car Loading Area (AOC)		14-2A

TABLE 6-2

SUMMARY OF SWMUs RECOMMENDED FOR EXCLUSION IN THE RFI

Unit	Number	Rationale for Exclusion
Area 5: Marshall Plant Production Area		
RCRA Hazardous Waste Drum Storage Area	5-1	Covered under existing RCRA Permit.
Used Oil Storage Tank	5-2	No evidence of release.
Used Oil Drum Storage	5-3	No potential for uncontained release. No evidence of problems.
Used Drum Storage Area	5-4	Area used for empty drum storage. No evidence of problems.
Dumpster Trash Compactor Facility	5-7	PPG Policy has always prohibited hazardous wastes from dumpsters. No evidence of problems.
Area 6: MCB Production Area		
Less Than 90 Day Accumulation Area	6-2	RCRA monitored unit.
Area 8: Chlorine and Caustic Process Area		
D009 Satellite Accumulation Area	8-1	RCRA monitored unit.
Area of K073 Waste Tank Car	8-2	Closed under RCRA.
Tracifier Treatment System (Removed)	8-3	System no longer exists on site.
pH Collection System	8-7	Water only adjusted for pH contaminants were previously removed through treatment.
Former Site of Circuits 1-4	8-10	Demolished and soil testing showed acceptable lead level.
Mercury Surface Impoundment	8-11	Closed under RCRA.
Mercury Butter Still	8-13	Above ground system on 2nd floor of building, bermed and contained, no evidence of leaks.

TABLE 6-2 (Continued)
SUMMARY OF SWMUs RECOMMENDED
FOR EXCLUSION IN THE RFI

Unit	Number	Rationale for Exclusion
Area 11: Calcium Hypochlorite Process Area		
Process Sewer for Cal-Hypo	11-2	Above ground system, no evidence of leaks
Area 13: Southern End of Plant		
Cal-Hypo Landfill	13-5	Permitted by WVDNR, nonhazardous waste.
Area 14: Carbon Bisulfide Process Area		
RCRA CS_2 D001 Drum Storage Area	14-1	Covered under existing RCRA permit.

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